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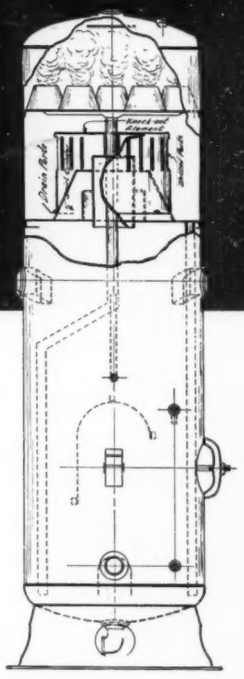

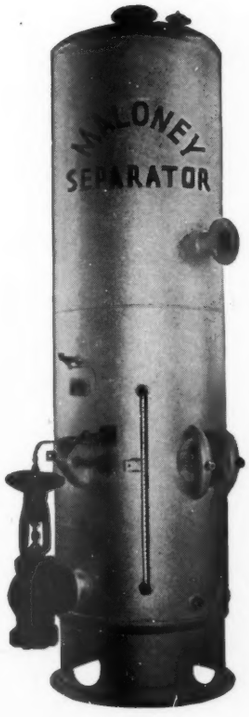

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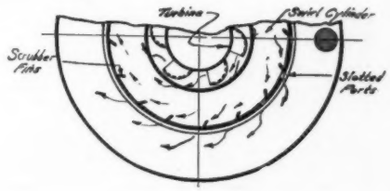

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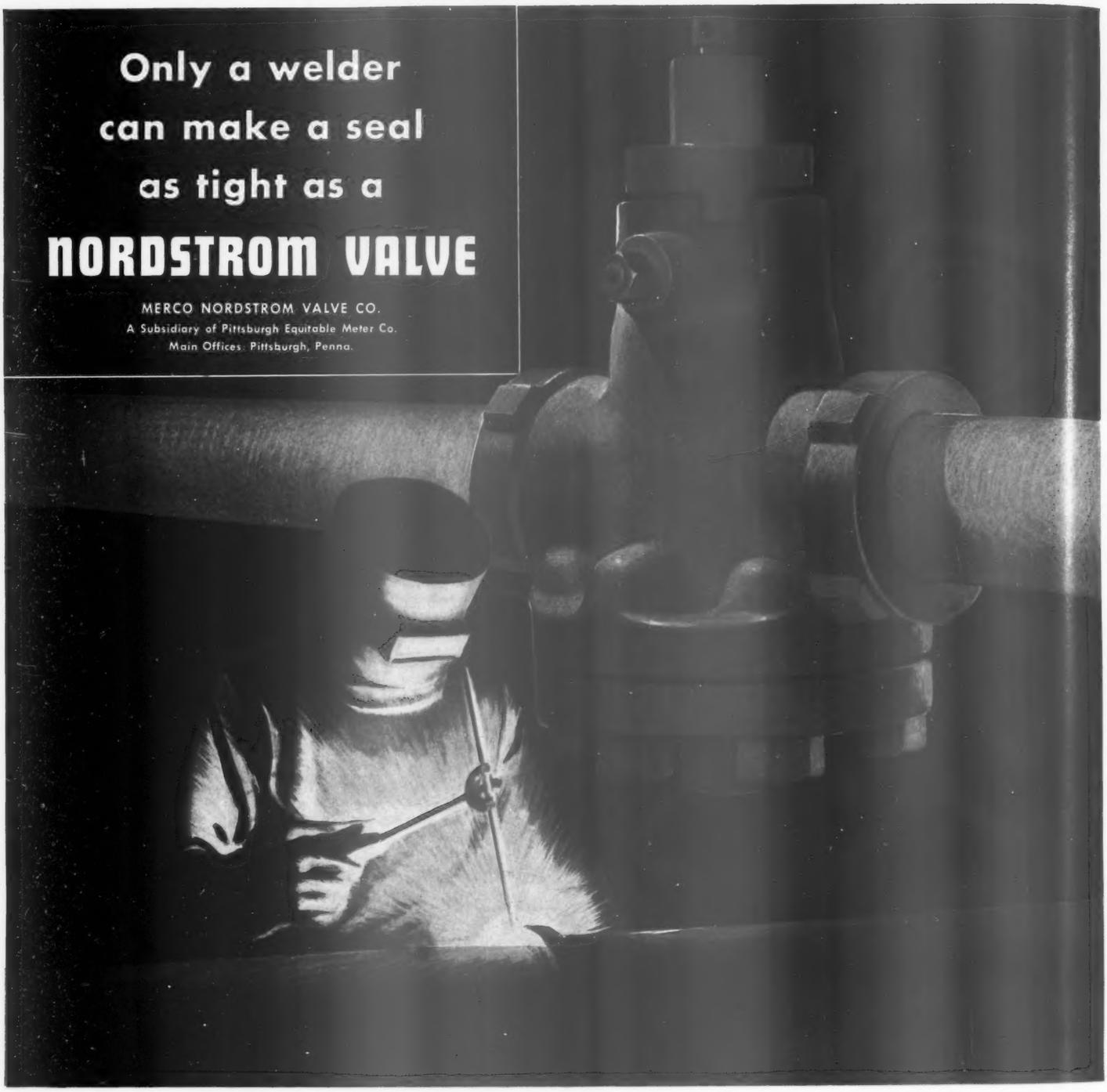

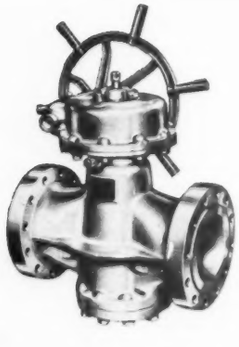

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The Oil and Gas Journal

PUBLISHED WEEKLY BY THE PETROLEUM PUBLISHING COMPANY AT TULSA, OKLAHOMA

HOME OFFICE, 211 S. CHEYENNE, TULSA
PHONE 3-6291

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SUBSCRIPTIONS: United States, 1 year, $6.00; 6 months, $3.00. Elsewhere 1 year, $7.00; 6 months, $3.50. SINGLE COPIES: 20 cents each. Back copies, when over a year old, 50 cents. CHANGES OF ADDRESS reaching the Tulsa office of the Journal by Saturday take effect with the following issue.

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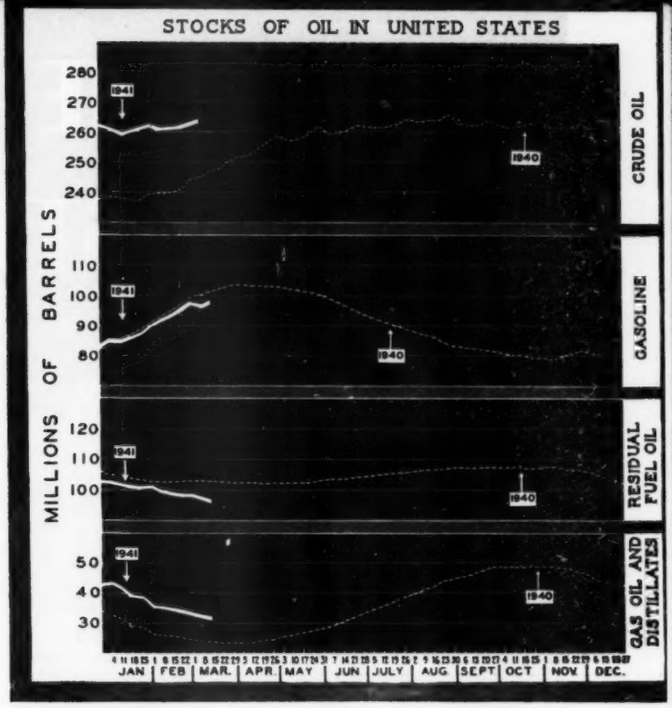
Trends

Government Report Reveals Important Changes in Demand



THE Bureau of Mines' report covering January operations, released this week, aids in clearing up some of the trends in operations which have been apparent since the first of the year but which have been difficult to explain from the partial consumptive data available. The report, which is summarized in convenient form in this issue (Page 41), reveals that this industry's defense program and the European war have brought unexpected developments which will have to be closely watched by the domestic industry in determining the level of its operations this year.

CRUDE PRODUCTION *3,676,705 bbl. daily average—up 40,865 bbl. One year ago 3,889,964 bbl.*

CRUDE STOCKS *264,001,000 bbl. as of March 8—up 825,000 bbl. One year ago 246,762,000 bbl.*

GASOLINE STOCKS **98,979,000 bbl. as of March 15—up 1,801,000 bbl. One year ago 101,431,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *96,661,000 bbl. as of March 15—down 711,000 bbl. One year ago 103,020,000 bbl.*

GAS OIL AND DISTILLATES *31,643,000 bbl. as of March 15—down 786,000 bbl. One year ago 23,888,000 bbl.*

REFINERY RUNS *3,550,000 bbl. daily week ended March 15—up 45,000 bbl. One year ago 3,500,000 bbl.*

*Includes 6,547,000 bbl. of aviation fuel.

The report shows an increase of 12.3 per cent in domestic gasoline consumption over January 1940. There was a decrease of 10 per cent in exports but this loss in foreign outlets was of minor importance in relation to the large domestic expansion and the gain in total demand (domestic plus exports) was 11.1 per cent. While it is improbable that this rate of increase was maintained throughout the first quarter, the January data do point to a record expansion in domestic consumption of motor fuels this year.

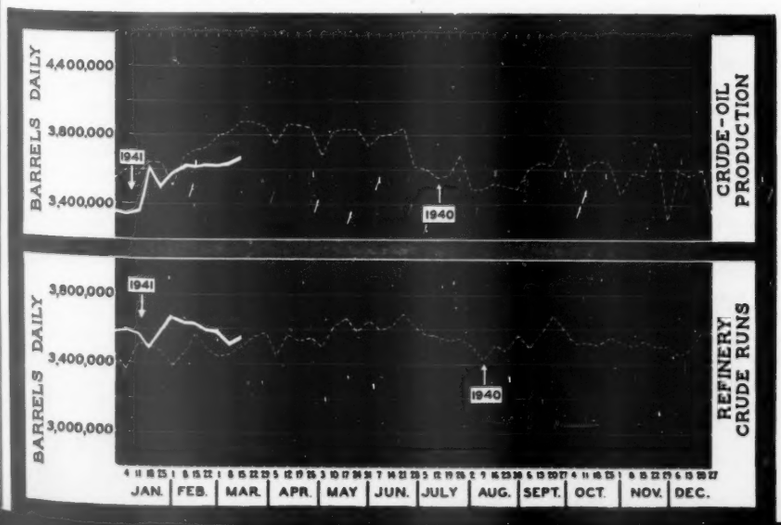
The favorable comparison between this year's total demands and those of early 1940 ends with the gasoline relationship. The domestic demand for lubricating oils increased 15.2 per cent in January but a 50 per cent decline in exports resulted in a 7.2 per cent loss in total markets for that product. Domestic kerosene requirements were slightly greater but a 76 per cent drop in exports brought a reduction in total demand. The sum of the domestic and export demands for distillate fuel oil was also less than in January 1940, with a small gain in residual fuel oils.

Summarized, the domestic demand for petroleum products in January expanded 120,000 bbl. daily, due entirely to the 160,000-bbl. daily gain in domestic-gasoline requirements. The growth in domestic requirements was entirely offset with a 121,000-bbl. daily decline in exports of crude oil and refinery products so that the total demand for all oils in January was practically the same as last year. These figures should be considered with the reports showing that imports of crude oil and refinery products for domestic consumption and under bond, for the 2 months under comparison, increased 58,000 bbl. daily in January this year.

It is apparent that the operating position of the industry has not changed materially since the close of January. So long as it continues the industry must balance its operations in line with developments which have brought substantial declines in foreign outlets, increased imports and a domestic consumption in which the gains are confined to gasoline and lubricants.

DAILY AVERAGE PRODUCTION FOR WEEK

	Mar. 15, 1941	Bur. Mines Mar. est. of demand	March state allowables	Mar. 8, 1941
Arkansas	70,805	69,700	69,969	70,715
California	626,250	596,400	571,500	610,150
Eastern fields	115,820	119,100		113,675
Illinois	325,180	335,200		325,420
Kansas	206,450	194,200	198,200	191,550
Louisiana	298,070	291,300	308,190	296,080
North Louisiana	*69,020*			*69,730*
Louisiana Gulf Coast	*229,050*			*226,350*
Michigan	39,725	47,700		39,775
Mississippi	19,150	20,300		20,590
Nebraska	3,400	3,200		3,375
New Mexico	110,720	103,900	110,000	106,380
Oklahoma	398,675	437,400	400,000	402,850
Rocky Mountain states	102,300	109,700		105,880
Texas	1,360,160	1,327,400	1,352,489	1,439,400
East Texas	*374,575*			*374,450*
West Texas	*240,075*			*236,800*
North Central Texas	*132,410*			*131,600*
East Central Texas	*76,575*			*72,450*
Texas Panhandle	*68,225*			*72,800*
Texas Gulf Coast	*372,750*			*368,350*
Southwest Texas	*95,550*			*92,950*
Total United States	3,676,705	3,655,500		3,635,840
Total production, Jan. 1-Mar. 15, 1941		239,153,710 bbl.		
Same period last year		247,718,983 bbl.		



GASOLINE HOLDS KEY TO INDUSTRY'S COURSE

By C. O. WILLSON

THE course of the petroleum industry this year will be determined by what happens in the gasoline market. You may look upon present low gasoline quotations as a cause of unsatisfactory conditions or you may consider them an effect of unsound operating practices in other divisions, but, regardless of viewpoints, they are the best barometer we have of the petroleum industry's operating position."

This opinion came from a veteran refiner and marketer of the Middle West, whose company is also engaged in producing and transporting crude oil. The statement is repeated here because it summarizes the views of many others obtained by the writer at scattered points east of the Rocky Mountains, covering current conditions and the 1941 outlook.

This executive's company, as was the case with most refining organizations, last year sold gasoline at the lowest average prices in its history. Quotations at the start of 1940 were at satisfactory levels, but that situation ended before the second quarter was over. Its records show that the decline continued through the third quarter with very little recovery during the final quarter of the year. At the end of February this year, the company's average gasoline prices had shown no improvement over the start of the year, although in volume its sales were running 10 per cent ahead of 1940.

Largely the same story comes from other operators with all reports adding up to a poor year as regards profits unless marketing conditions in this basic product of the industry are changed in the near future. Improvement in refinery markets, particularly gasoline, is placed ahead of advances in crude-oil price schedules.

Current Situation

The accompanying Charts 1 and 2 were prepared to show briefly what the situation has been and is, in regard to gasoline markets. This relationship could be shown in a hundred different ways and there would be no wide differences in the results obtained.

It has been demonstrated during the past year as it has many times in the past that marketing conditions in the petroleum industry considered over a year or longer are fairly uniform. One area may enjoy advantages over others in regard to prices for a brief period but the workings of competition gradually bring adjustments which reflect the fact that motor fuels are sold on markets controlled by national and international conditions.

An example of this basic situation was revealed last year in Gulf Coast markets. The large decline in export outlets and high tanker rates early last year shut off markets for many Gulf Coast refiners and prices on several products slumped sharply and were below the usual price levels in relation to interior markets. Later, many of these coastal refiners adjusted their operations so they could use the Mississippi River and other transportation media and greatly increased their sales in southwestern and middle western markets. This development tended to end the differences between Gulf Coast, Mid-Continent and middle western prices.

Another example was the Illinois development of 1939 and 1940. The flood of Illinois crude oil first brought weakness to refinery markets of the Middle West and then quickly spread to the eastern states and to the Mid-Continent. In the case of the integrated companies operating over a large section or all of the United States, gasoline price relationships from year to year are in general the same, regardless of whether they are based on the tank wagon at Kokomo, Ind., a barge delivery in New York City, the tank-car price at Wichita, Kans., or the tanker quotation at a Gulf Coast terminal.

Gasoline Price Low

Chart 1 shows the trend in gasoline prices based on The Oil and Gas Journal's 50 cities located in 48 states and Washington, D. C. The chart reflects the advance in prices the latter part of 1939 which were of substantial aid to the earnings of the last quarter of that year. These prices continued over into the first quarter of 1940, which was also a satisfactory earning period. The price trend through 1940 was generally downward, reaching a low of 11.98 cents per gallon on November 1, a decline of 1½ cents per gallon compared to the January 1 figure. Since November 1 there has been a slight recovery, but the March 1, 1941, figure was the lowest for that date since 1933, a low point in the depression period of the early thirties and a year when 36° gravity crude oil in the Mid-Continent averaged 62 cents per barrel.

The importance of this gasoline-price decline of the past year can be appreciated when it is realized that a drop of 1 cent per gallon in gasoline prices now represents a reduction of approximately 275 million dollars yearly in the gross revenue of the industry.

The significance of the gasoline prices at refineries in relation to the total plant revenue is explained in Chart 2. This chart shows that gross revenue in a representative Mid-Continent refinery operation in 1940 was the lowest since 1934

VIEWS AND PROSPECTS

"Conditions in the marketing end of our industry will not improve until the top executives make the sales practices of their own companies the first order of business."

This statement came from the executive head of one of the largest companies with nationwide and large foreign distributing facilities. This executive attends district sales meetings of his company, knows every key man in the marketing organization personally and keeps in daily touch with developments affecting the sales policies of his company.

"The restoration of confidence is the key to solution of marketing and most of the other problems of the petroleum industry."

This, from another major executive who feels that the correction of all operating problems starts with the production of crude oil. He stresses the necessity of the state conservation bodies, with the support of operators, adopting proration policies which will give the industry an accurate yardstick on which to project operations 3 or more months in advance.

These are two views obtained by the author in interviewing representative operators in widely scattered parts of the country. Other opinions which are of interest in connection with 1941's prospects are discussed in this article.

with practically no recovery as of March 11 this year. The operating margin in 1940 and so far this year is below 1939 and much less than during 1936 and 1937, the 2 best years of the 1930-40 decade.

Chart 2 is based on published quotations for the principal refinery products not including lubricating oils. A chart which took into consideration the refiners' contract prices would not show the same refinery gross revenue but the year-to-year comparisons would be practically the same as revealed in Chart 2.

A large part of the variation shown in gross refinery revenue and operating margins for all years is accounted for by the ups and downs of the gasoline-tank-car market in the Mid-Continent. Advances in kerosene, distillate and heavy fuel oftentimes are of some aid in refinery income as was the case of last year, but the variations in prices for these products are of minor importance compared to the changes in gasoline quotations.

Questions

With the exceptionally low prices for gasoline shown and their importance to the industry's gross and net revenue established, questions naturally arise as to causes and remedies. The writer has asked several sales managers and others in position to know, regarding the significance of several developments which directly or indirectly relate to the prices the industry is receiving for gasoline. These questions had to do with the following:

The adoption of the "Iowa plan" several years ago under which companies gave up their service-station operations and turned them over to independent dealers and thus surrendered their control of retail prices.

The general licensing of tetraethyl lead made necessary by court decisions.

The cut-rate dealers who sell gasoline 2 or more cents per gallon under the quotations of other sellers.

The extension of gasoline-pipe-line systems.

Special concessions to dealers such as the furnishing of equipment and low rentals.

The answers generally overlapped with those outlining their views crediting more than one development in explanation of unsatisfactory conditions.

In regard to the Iowa plan, a minority feel that a mistake was made when oil companies retired from the business of operating stations, a development brought about principally by chain-store and social-security legislation. Several companies are still operating part of their stations and, in a few cases at least, refiners and jobbers have been forced to take back company-owned stations because a satisfactory dealer-leasing arrangement could not be worked out.

It is agreed that the wide-scale licensing of the ethyl fluid has brought confusion in the sale of ethylized motor fuels and this fact has complicated the problem of securing adequate prices for the branded grades of the larger operators. This situation arises from the fact that most sellers are now ethylizing three grades of motor fuels and consumers are often confused, due to the sales practices of many dealers, as to what grade they are buying. Sellers state that in certain areas it is practically impossible to maintain the price differential of 2 cents per gallon between the premium Ethyl and the regular branded grades and 1 or more cents per gallon between the regular and the third-grade material.

In regard to pipe lines it has been noted that when a new line is built the operator generally does whatever is necessary to secure a part of the business in the territory covered by the line. In some cases a large number of new stations has been built. In other situations, outlets have been obtained by giving special concessions to jobbers and dealers. These developments have had at least a temporary disturbing effect on the general level of gasoline price schedules in important areas.

The old custom of lending equipment, low rentals, guaranteed margins to dealers and jobbers and a long list of other practices which have a bearing on the net return to the industry in the sale of a gallon of gasoline, continue at many points. One large operator says that conditions in this regard are as bad as they have ever been in the industry's history.

Cut-Price Operations

Many of these refining and marketing practices dovetail into the operations of the cut-price dealers, who, as a group, appear to be increasing in importance in both jobber and retail-station sales. Many refinery sales managers unhesitatingly blame these operators for most of their gasoline-marketing troubles.

These cut-price stations usually are independently owned and operated although there are situations in which the stations are owned by refiners and leased to dealers who sell the refiners' products. With few exceptions, the stations sell quality products meeting the specifications of their competitors. Special prices on gasoline are often offered over week-end periods with quotations at all times 2 or more cents per gallon under those of other dealers. Sales of cut-price dealers from one station have totaled as high as 150,000 gal. monthly. Sales of 2,000 gal. daily are not unusual.

The competitive advantages of these stations over the average stations selling from 3,000 to 5,000 gal. monthly is readily apparent. As the business of the cut-price operator expands, obviously the per-station sales of other operators decline. One sales manager explains that as the sales per station decrease the dealers seek wider margins, lower rentals, free equipment and other concessions. This manager believes that this method of meeting cut-price competition with higher costs in their own dealer operations is unsound. He feels that if these trends continue the larger companies will have no choice but to adopt the practices of the "bargain" operators. This will mean the abandonment of uneconomic units — already under way by several companies—and the general adoption of a policy of increasing per-station sales with narrower margins.

Marketing Not Responsible

Many observers are inclined to isolate these marketing developments from the rest of the industry. They feel that they represent trends in petroleum merchandising which should have little direct bearing on the prices which refiners receive for their gasoline. They contend that the trouble begins when refiners manufacture more gasoline than the wholesale and retail outlets can readily absorb and then start offering the various types of concessions off the price they should receive at their plants. These concessions are naturally carried through to the tank-wagon and consumer quotations. These analysts look upon the unwanted developments which have been outlined above, as effects from unbalanced crude-oil and refinery operations coupled with the natural trends of an industry seeking the most economic method of distributing its products.

If this analysis is correct the solution for 1941's

(Continued on Page 41)

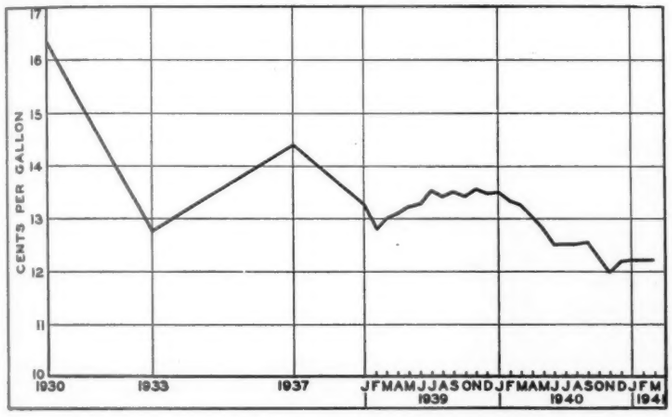


CHART 1—RETAIL GASOLINE PRICES NEAR LOW POINT

Retail gasoline prices in 50 representative cities exclusive of federal, state, county, and city taxes in cents per gallon: 1930, 16.33; 1933, 12.76; 1937, 14.40; 1939, 13.29, 1940, 12.71; 1941 (2 months), 12.21

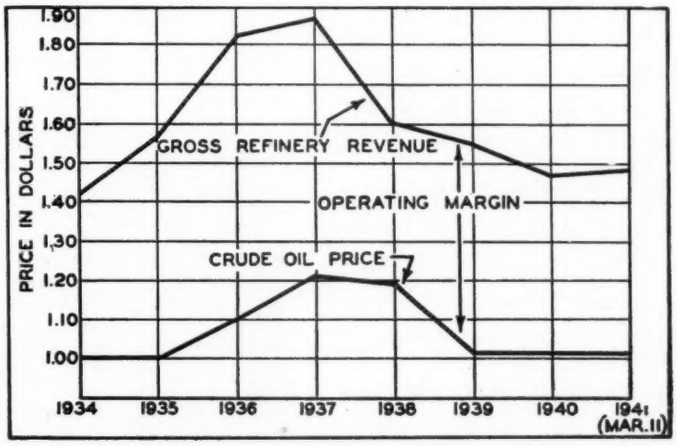


CHART 2—REFINERY REVENUE AND OPERATING MARGIN BASED ON MID-CONTINENT REFINERY OPERATIONS. DATA PER BARREL

	Mar. 11, 1941	1940	1939	1938	1937	1936	1935	1934
Gross refinery revenue	$1.4831	$1.4686	$1.5439	$1.602	$1.867	$1.827	$1.572	$1.422
Crude-oil price	1.02	1.02	1.02	1.19	1.21	1.10	1.00	1.00
Operating margin*	.4631	.4486	.5239	.412	.657	.727	.572	.422

***Includes pipe-line transportation from fields to refinery and manufacturing and refinery sales costs. Gross refinery revenue is based on yields per barrel of: Gasoline, 25 gal.; kerosene, 2.5 gal.; gas oil and distillate, 5 gal.; residual fuel oil, 8 gal.; gas and loss, 1½ gal. Crude oil is posted schedule at well for 36° gravity.**

SPARKS . . . FROM THE NEWS

HONORED: Abell field, the latest important pool of West Texas, was named after the geologist whose work brought about the discovery. Now they are laying out a townsite near the field with the same name.

PERFORMANCE: Oklahoma's Governor Phillips got the state's voters to approve a constitutional amendment which will force law makers to balance the budget. To help out, the governor now wants to drill four wells jam-up against the State Capitol Building.

QUESTION: Exports so far this year have been at the lowest level in years. The big question is whether the lend-lease act will change this situation with increased shipments to the British.

ACE IN THE HOLE: Leases sans drilling in Nebraska don't mean anything. Several big oil fields are now producing on leases held 9 years and 6 months.

OPPORTUNITY KNOCKS: Producers tired of 80-cent oil in many fields might take a shot at some 18-cent natural gas in the eastern fields. Demand is rapidly increasing.

SHIFTING EMPLOYMENT: The number of men employed in any one of several refinery research organizations is rapidly approaching the number of operators employed in a major refining plant.

EXPLANATION: Many producers want to know why posted crude schedules are not advanced. If they will look at the service-station gasoline prices in the oil country and elsewhere they will have the principal explanation.

RESULTS: A checkup as the first quarter draws to a close shows that while there has been no great excitement anywhere there have been at least the usual number of new discoveries, the importance of which will be more apparent later in the year.

LOGIC: A witness before a Georgia legislative committee opposed the construction of a pipe line because it would take 6½ days to move a gallon of gasoline from the Gulf to Chatanooga along the line. The committee was apparently quite impressed.

FREIGHT CONSUMER: After completing the rail haul of 100 loaded cars from Chicago to California and back by means of a new diesel-electric freight engine, the sponsoring railroad ordered two engines of the new type. The rail company learned that only one-third the number of stops was necessary when using oil as when coal is burned.

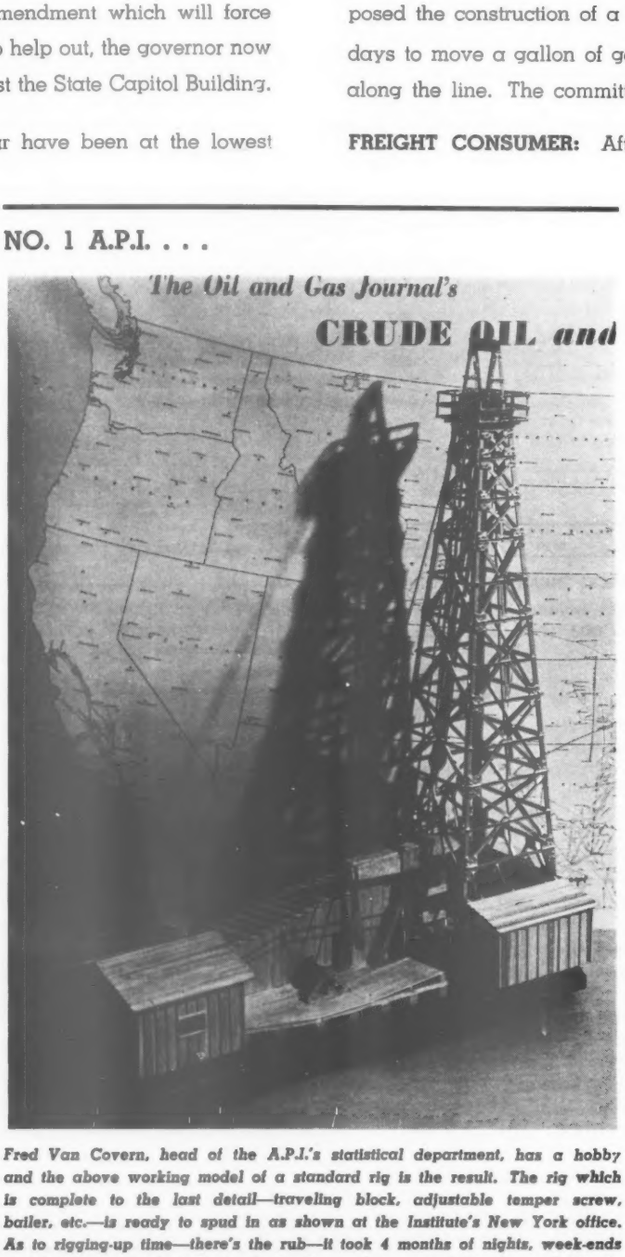
WHO GAINED? High-gravity producers in San Joaquin, California, lost 10 cents. Low-gravity fields gained a nickel. Who won what, is the question.

ONLY THE BEGINNING: N.R.P.B.'s proposal for federal control still leaves a few alphabetical agencies to be heard from.

THREE-YEAR FAILURE: Mexico celebrated the third anniversary of oil expropriation Tuesday. Many leaders in that country now realize they were celebrating a failure.

SURPRISED: Even the inveterately optimistic oil men lifted an eyebrow when domestic gasoline demand went up 12.3 per cent in January. Unfortunately this gain didn't extend to other products.

NO. 1 A.P.I. . . .



Fred Van Covern, head of the A.P.I.'s statistical department, has a hobby and the above working model of a standard rig is the result. The rig which is complete to the last detail—traveling block, adjustable temper screw, bailer, etc.—is ready to spud in as shown at the Institute's New York office. As to rigging-up time—there's the rub—it took 4 months of nights, week-ends and holidays. Incidentally in the background is part of The Journal's Crude Oil and Gasoline Pipe Line map

Leasing in Western Nebraska Developing Into Major Play

By W. V. HOWARD

A leasing campaign in which most of the major companies are interested has been conducted quietly in western Nebraska and northwestern Kansas for some months. At the present time, an estimated 5,000,000 acres are under lease. The Cambridge arch is the major structural feature in this region. An article on the geology of the area will appear in an early issue.

LINCOLN, Neb., Mar. 10.—The greatest major company lease play since the Illinois campaign has been under way in western Nebraska for some months until it is estimated that from 4,500,000 to 5,000,000 acres are under lease. One company, Sinclair Prairie Oil Co., is credited with approximately one-quarter of the total and its operations extend completely across the state into Sheridan County.

Leasing in western Nebraska began on a broad scale in 1935 when the Texas, Gulf and Magnolia companies leased large portions of Harlan, Phelps, Gosper and Furnas counties. At this time, the Texas Co. stepped out beyond the others and leased large blocks on the west flank of the Cambridge arch as far north as Keith County. Some drilling followed, both on the Nebraska side of the line and in Phillips and Norton counties in Kansas. Small pools were opened up but they did not look too promising and the play died down. Added to a small production, there was the disadvantage of lack of pipe-line connections with markets. Then Illinois developed into a boom of major proportions and the Nebraska play became dormant.

In September 1940, Cities Service Oil Co. revived interest in the region when it opened up the Ray pool in 32-5s-20w, in the southwestern part of Phillips County, Kansas. The discovery well had an initial production of 2,135 bbl. from the basal sand which lies directly above the granite. Later wells in this pool reported oil in granite wash and one reported showings in the Arbuckle. Cities Service already had blocks in Furnas and Harlan counties and other companies joined in the hunt for leases. Stanolind Oil & Gas Co. checkerboarded a large area to the northwest and was followed by Skelly Oil Co.. Gulf Oil Corp. took out a number of blocks and checkerboarded as well while Phillips, Carter and Sinclair also picked up large blocks, Carter having a reported 500,000 acres under lease.

Most of the leasing on the east side of the arch stopped at the Platte River, which forms the northern boundary of Gosper and Phelps counties, but Phillips took the lead in leasing Dawson County to the north and Sinclair Prairie went even farther north into Custer, Logan and McPherson counties.

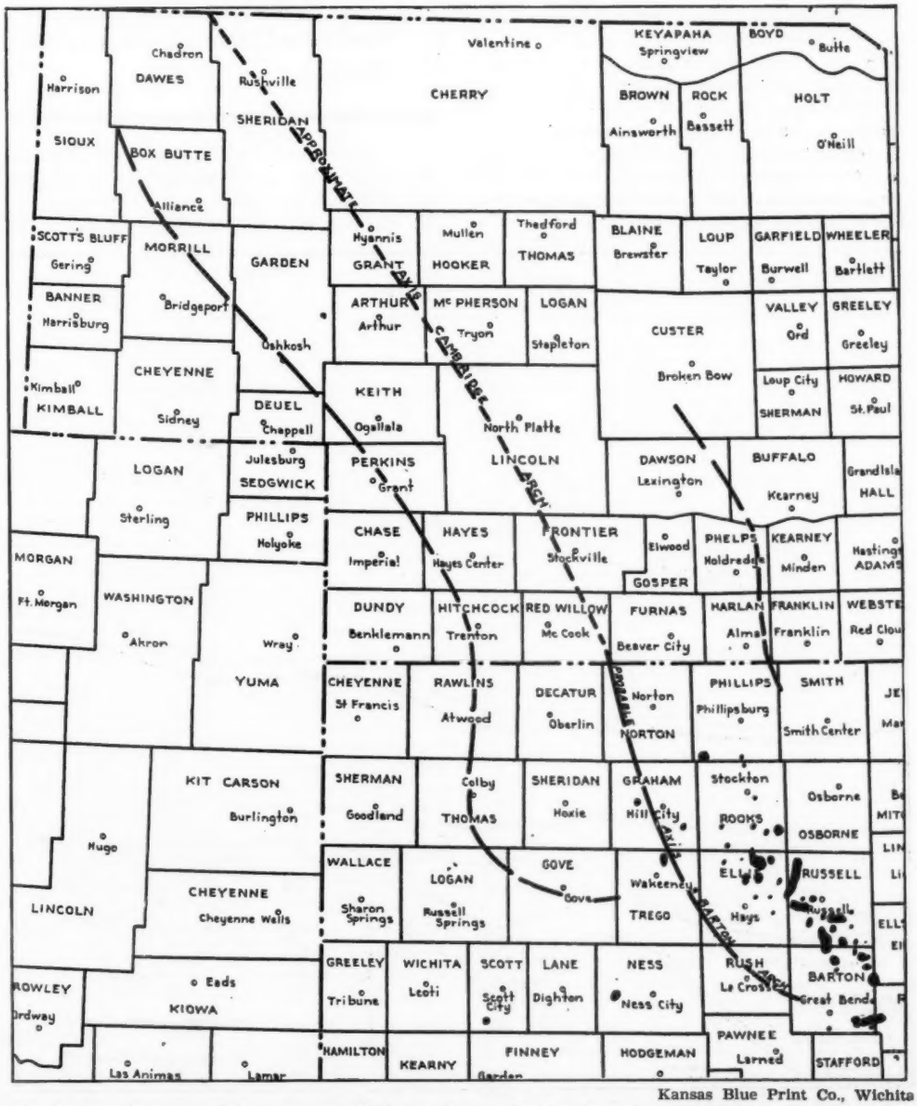
West Side Leasing

The Texas Co. already had some blocks on the west side of the arch and were joined by Gulf. Again, Sinclair Prairie joined the play and leased a number of blocks extending through Lincoln and Keith counties into Garden, Box Butte and Sheridan counties. Most of the leasing was south of the Platte, with Phillips, Magnolia and Skelly strongly represented, although Texas leases extend into Keith County and Sinclair Prairie's almost to the Dakota line.

A number of blocks and scattered leases have also been taken out by independents, some of whom are believed to be acting for major companies who have not yet officially entered the picture. At the present time the counties south of the Platte are leased to the extent of from 60 to 80 per cent, or more.

A great deal of the acreage was picked up on a 10-cent-an-acre basis, but recently prices have stiffened and there is relatively little of this cheap acreage to be had. In the southern counties farm ownerships are divided between large and small farms except in the Platte Valley where small farms are the rule. This area is rich farming country, being irrigated by one of the nation's most important irrigation projects.

Farther north, the land is mainly ranch land with blocks of 10,000 to 20,000 acres or more. Except along the Platte, much of the acreage is held by companies and nonresidents, many of whom



Kansas Blue Print Co., Wichita

Fig. 1—Map of western Nebraska and northwestern Kansas showing the approximate limits of the leasing activity together with the relationship between this area and the producing fields on the Barton arch

are holding for higher prices and the added protection of dividing their blocks among several companies.

Following the discovery of shows of oil in the Topeka series in Thomas County, Kansas, interest has revived in this area also. Large parts of Rawlins, Sheridan and Decatur counties have been taken out and Magnolia and Stanolind are reported particularly active in this sector. The Shallow Water extension found by Atlantic is also tied in with the play as there is considerable activity in Scott, Logan, Gove and Thomas counties.

Prospecting

One well has already been drilled in southwestern Nebraska this year, Barnsdall and Helmerich & Payne 1 Erickson, SW SW SW 8-1n-23w, in Furnas County. The well had granite at 3,498 ft. and was abandoned.

In Harlan County, SE NW 15-2n-18w, Veeder Supply and West et al 1 Battin is drilling. Phillips is reported to have an interest in this well and Sinclair Prairie, Texas, Gulf and Margay are reported to have purchased acreage. In Dawson County, Phillips has announced the location for 1 Brugger in the C NW SE 21-10n-22w, on a seismograph high where Phillips has a 14,000-acre block.

Phillips is also core-drilling in the southern tier of counties running east from Furnas County, while Carter has two seismograph parties in the area and Sinclair Prairie one.

In Thomas County, Kansas, Alva Billings is drilling a second well, 1 Ryan, E½ NE SE 27-8s-32w, a short distance to the northeast of Ramsey 1 Ryan. This well is now reported at 3,967 ft. and picked up the same oil show in or above the Topeka series at 3,636-39 ft. The show was small, amounting only to about a gallon per hour. It was acidized without increasing production.

NEXT WEEK

the ANNUAL

REFINERY

NUMBER

Containing

- A summary of refining trends
- 35 pages of technical features
- Series of statistical charts
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Also—

- The annual survey of plants and personnel operating in the United States, Canada and Mexico.

The activity is extending along both flanks of the Barton arch, which becomes the Cambridge arch in Nebraska. The granite runs high along this arch, occurring at about —1,500 ft. in the southern part of the area. Helmerich & Payne 1 Hansen, SW NW 24-15n-31w, was drilled in the spring of 1938 near North Platte, in Lincoln County. Starting at an elevation of 3,020 ft., this well struck the granite at 3,825 ft., or at an elevation of —805 ft. Farther north in Grant County, Byrd-Frost 1 Abbott, NE NW 22-24n-38w, found granite at 4,033 ft., or at —283 ft., while a slim-hole test, Ohio 1 Demmer in 22-31n-46w, near Rushville in Sheridan County, found granite at 1,050 ft. above sea level and at a depth of 2,820 ft.

On the east flank of the arch, Trees 1 Bergman, SW 23-6n-19w, in Phelps County, with a surface elevation of 2,345 ft., found pre-Cambrian schists at 4,534 ft., or 2,189 ft. below sea level. Prouty Production Co. 1 Katzberg, SW 26-7n-10w, in Adams County, went to 4,005 ft., or —2,060 ft. without leaving the Arbuckle.

On the west side of the arch, C. L. Price drilled 1 Carter, SE NE SW 35-2n-32w, Hitchcock County, to granite finding it at 4,460 ft., or at an elevation of —1,565 ft. Two wells in the extreme northwestern part of the state went to 3,999 ft. and 6,846 ft., respectively, without leaving the Carboniferous. The first of these wells, Huber 1 Morgan, SW SW 32-35n-56w, with a surface elevation of 3,992 ft., entered the Pennsylvanian at 3,906 ft., while the other well, Union 15-1 Agate, NW SE SE 15-28n-55w, with a surface elevation of 4,705 ft. was still in anhydrite of probable Permian age when it quit at —2,152 ft.

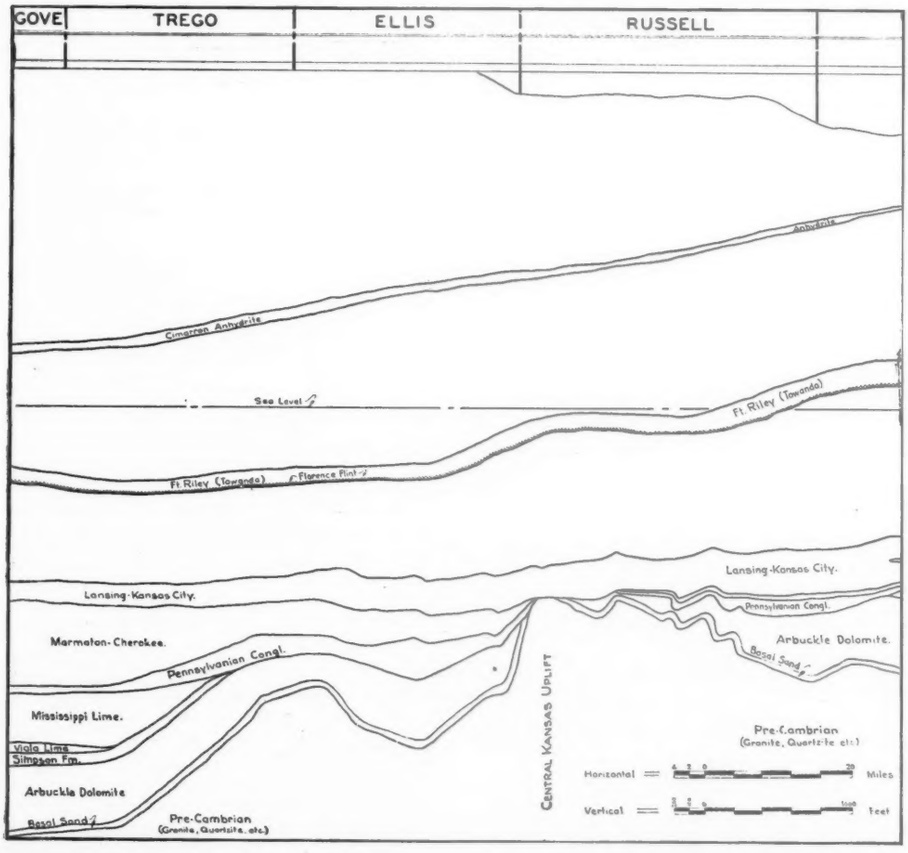


Fig. 2—Portion of the Kansas Geological Society's cross-section showing the cutting out of the older producing formations on the flank of the Central Kansas uplift. This relationship is continued into western Nebraska

Possible Pays

The lowest hoped-for producing horizon is the basal sandstone which overlies the granite. This formation, variously called "Reagan," "La Motte" or "basal" sand consist in part of granite wash and in places is conglomeratic. It produces in several pools in Russell County, Kansas, as well as in the Ray pool in Phillips County. It occurs in all wells which have penetrated the granite in Nebraska.

The other possible producing horizons, the Arbuckle, chat, Kansas City-Lansing, etc., are not found on the crest of the arch but are beveled off by erosion on the flanks. The lowest formation extending completely across the arch is of Permian or upper Pennsylvanian age.

Both the Morrison and Sundance formations of Jurassic age pinch out against the west side of the arch, the Sundance disappearing first. This formation is an important producer in Wyoming and production is hoped for from it in Nebraska. The Dakota sandstones are found over the arch and far to the east but carry water. The Jurassic and Cretaceous rocks lie unconformably on the older formations and effectively mask all structures. They have a regional dip to the west and thicken in the same direction. Above them and generally blanketing the whole area are freshwater and continental deposits of Tertiary and Pleistocene age.

Summary

The western Nebraska play which has assumed major proportions is being conducted in the hope of continuing the Kansas production along the flanks of the Barton-Cambridge arch. Since the farthest north discoveries in Kansas lie on the northeast flank, most activity in Nebraska lies on that flank. However, shows found in the Topeka, with the important production in the Lance Creek field in Wyoming, together with possibilities in the Cretaceous make the western flank almost equally interesting. The fact that this sector is one of the largest virtually untested areas in the United States having production at both ends has given rise to great interest and considerable enthusiasm concerning the area which promises to see considerable drilling during the next 2 or 3 years.

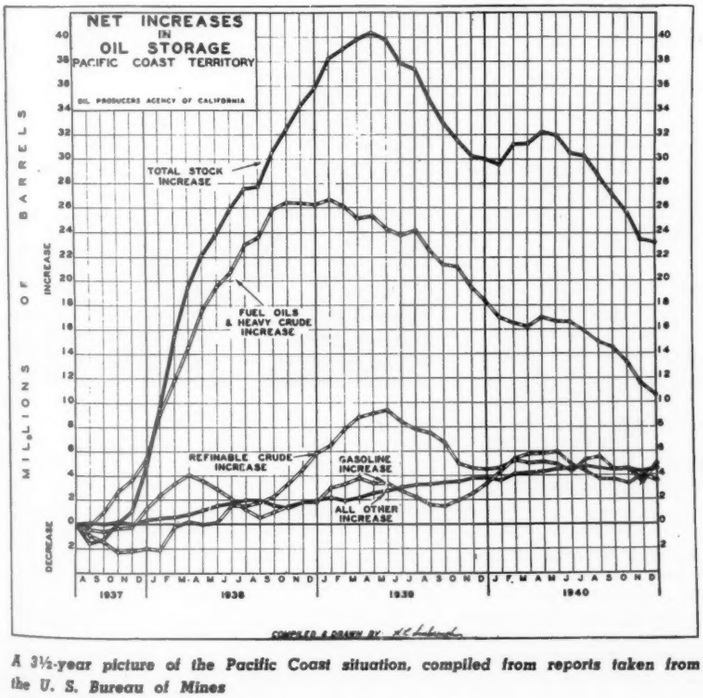
California Crude-Price Adjustments Reflect Changes in Outlets

By L. P. STOCKMAN

LOS ANGELES, Calif., Mar. 18.—Adjustments by large purchasers in California last week in lifting low-gravity oil and in modifying the premium for lighter grades again center attention on basic changes in crude markets. The first tendency of refiners to narrow the spread between low and high-gravity crudes, a trend which has its genesis in the stronger demand for residual fuels, appeared last October in Louisiana and Arkansas. Standard Oil Co. of California and Union Oil Co. of California both made adjustments.

Standard of California raised heavy crudes 5 cents per barrel in San Joaquin Valley fields and Newhall. Simultaneously, a reduction of 10 cents per barrel was made for the lightest crudes in San Joaquin Valley fields and in the Elwood field of Santa Barbara County. Price schedules on Los Angeles Basin fields and others in the coastal district were unchanged. The new schedule quotes 14 to 19.9-gravity oil in San Joaquin Valley fields at 65 cents per barrel and places a top of $1.19 per barrel on all light refinable crude oil above specified top gravities. In the Greeley, Canal and Wasco fields of Kern County, Standard quotes $1.19 per barrel for 39 gravity and above. At Kettleman North Dome, the top price of $1.19 applies to 37 gravity and above. Price details vary in several fields, but the top of $1.19 per barrel applies to all outside the Los Angeles Basin fields. The reduction in Elwood brings 35 gravity and above down to $1.19 per barrel, f.o.b. ships.

This revision in light and heavy crude oil is significant because it indicates higher demand for heavy oils and a discount on the spread between low gravity and light crudes. It is also important because if heavy crude oil is worth more in view of the large demand, then fuel-oil prices may receive an upward revision.


NET INCREASES IN OIL STORAGE
PACIFIC COAST TERRITORY
OIL PRODUCERS AGENCY OF CALIFORNIA
MILLIONS OF BARRELS
INCREASE
DECREASE
TOTAL STOCK INCREASE
FUEL OILS & HEAVY CRUDE INCREASE
REFINABLE CRUDE INCREASE
GASOLINE INCREASE
ALL OTHER INCREASE
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1937
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COMPILED & DRAWN BY

A 3½-year picture of the Pacific Coast situation, compiled from reports taken from the U. S. Bureau of Mines

During 1940 California refiners reduced stocks of heavy crude oil 1,430,102 bbl. according to A.P.I. data. During 1939 stocks of heavy crude were cut 2,979,086 bbl., which means that low-gravity oil inventories have been reduced 4,409,188 bbl. in 2 years. During this same period, fuel-oil stocks in Pacific Coast territory have been reduced 11,037,714 bbl., the reduction in 1940 being 6,966,267 bbl. and the cut in 1939 being 4,071,447 bbl. This means that these heavy stocks, fuel oil and heavy crude, have been reduced 15,446,902 bbl. during the past 2 years. During this same period, gasoline stocks have increased 1,604,986 bbl. and naphtha distillates increased 323,564 bbl. These data indicate altered conditions affecting heavy and light crudes. The California Conservation Committee has been investigating relationship of crudes for several months and still has not been able to devise any way to stimulate the production of heavy crude and at the same time reduce production of light crudes. The price advance on heavy crude may stimulate drilling operations in fields that produce heavy crude and retard development in light-oil fields.

Demand for fuel oil during the past 2 years normally would be expected to result in higher prices than the distress quotations that have prevailed during 1940. Fuel-oil and gasoline demand during 1941 are heading toward new peaks. Standard reduced the price of fuel oil on January 1, 1940, from 90 cents per barrel to 75 cents. The 15-cent reduction in fuel oil was reflected a month later when the company reduced the price of crude oil in proportion to its fuel content. Under this schedule heavy crude received the largest cut and lighter grades received the least reduction. The reduction in the price of heavy crude on February 1, 1940, was roughly 10 cents per barrel. Under Standard's new schedule one-half of the February cut has been restored. Paradoxical as it may seem, the cut in fuel oil at the beginning of last year was contrary to normal expectations because it was made despite a reduction in fuel-oil stocks of 4,071,447 bbl. in 1939. The reduction in crude oil on February 1, 1940, was a normal expectation in view of the previous cut in fuel-oil prices. The basic reason for the cut in fuel oil has been questioned by a number of producers who feel that it is disciplinary in nature and consists of a marketing problem that has resulted from someone stepping out of line.

The probability that fuel-oil prices may advance soon is enhanced by prospects that a greater amount of heavy crude may be cracked during 1941 and this will obviously reduce stocks of uncracked fuel oil. A recent check by the Bureau of Mines indicates that out of the California fuel-oil stocks of 60,000,000 bbl. only 32,700,000 bbl. are susceptible to cracking. Union Oil Co. will soon be in a position to crack heavy oil and this program contemplates running to coke in order to provide a supply for Pacific Gas & Electric Co. at Oleum in the San Francisco region. Shell Oil Co., at Martinez, Wilmington and Watson refineries has been cracking to coke for some time. Wilshire Oil Co. occasionally runs to coke although not as a general rule. The new Wilmington refinery of Douglas Oil & Refining Co., of which Donald Douglas of the Douglas Aircraft Co. is head, will contain coking facilities but its operating status has not been determined. The recent embargo placed on calcined coke may possibly retard the demand for petroleum coke but this remains to be seen. Japan has been the principal export consumer of coke. Several million pounds of coke have been exported from Los Angeles since construction of the calcining unit at Wilmington last year by the Great Lakes Carbon Co.

Producers' Price Campaign

The San Joaquin Valley Oil Producers Association, of which Dana Hogan is president; Allen A. Jergins, vice president; Thomas W. McManus, secretary-treasurer, and E. E. Pyles, R. A. Broomfield, Jr., W. M. Keck, Jr., and A. L. Marsten directors, issued a statement late in February 1941 which said:

"Under present economic conditions the average independent California producer of heavy crude oil is not going to be able to survive. The great increase in taxes, severe curtailment of production, and higher costs of material and labor make it impossible for the independent producer in many instances to break even with the present price for heavy crude in the San Joaquin Valley of 60 cents per barrel and in Los Angeles Basin of 63 cents to 65 cents per barrel. Because of the increased demand for heavy crude and fuel oil and the large withdrawals of both from storage last year to meet the demand there is no sound reason for their present low price. The present Los Angeles price for expensively produced domestic fuel oil is only 75 cents a barrel while in New York cheaply produced foreign fuel oil is bringing $1.35 per barrel. An adjustment to the price levels of January 1940, or even higher, is further justified by the fact that other commodities have increased in price since then while the Government's price index for petroleum and its products has dropped so much that it is now only 49.3 compared with 79.6 for all other commodities. Those producing crude oil, which is essential to our national defense, should not be discriminated against when producers of other commodities are receiving a fair price for their products. It is, therefore, proper that this association de-

(Continued on Page 38)

Y. P. F. refinery at Godoy Cruz, Mendoza, western Argentina

Y. P. F. Enlarging Capacities Of Three Refineries

By J. P. O'DONNELL

NEW YORK, Mar. 18.—One of the largest refinery-construction programs undertaken by a government-oil agency in some time is now nearing completion in Argentina where Yacimientos Petroliferous Fiscales is enlarging the capacity of three refineries at Mendoza, Salta, and La Plata. All the work is being done by the Lummus Co. of New York, which is installing a visbreaking unit at the La Plata refinery near Buenos Aires, a combination topping and cracking unit at the refinery in the Province of Salta, and a combination topping, visbreaking, and cracking unit at the Mendoza refinery in western Argentina.

These units will add materially to the refining capacity of Argentina which is already the largest of any country in South America. Previous to these installations, Argentina's refining capacity was rated at 107,850 bbl. per day and compared with the 78,300-bbl.-per-day capacity of Venezuela, second most important South American country from a refining-volume standpoint.

The largest of the three units is the visbreaker installed at the La Plata refinery which will charge heavy, 13.5° gravity cracked fuel oil or a combination of heavy fuel oil and asphalt in the ratio of 7 to 3, respectively. The raw charge will be 5,000 bbl. per day but the actual throughput of the unit, because of the high percentage of recycling, will be close to 9,000 bbl. per day. Products of this unit will be gasoline, gas oil, fuel oil, and gas.

Steam Generation

The most distinctive feature of this unit is that steam generation is accomplished in the convection section of the heater and from the circulating fuel-oil stream. No trouble with gumming has been encountered in utilizing the hot fuel-oil stream for this purpose. The heater is a two-section type with central convection in which the steam is generated from water preheated by waste heat from the circulating stream. This arrangement will provide the refinery with 10,000 lb. of 386° F., 190-lb. gage steam per hour and at the same time will result in a substantial saving in utility costs.

The Salta refinery, located in extreme northern Argentina, was expanded by the addition of a 2,000-bbl.-per-day combination topping and cracking unit. This unit is now in operation. The Salta refinery operates on crude produced in the nearby Rio Pezcado and Vespucio fields. Products from topping will include gasoline, naphtha, kerosene, gas oil, both as a product and as cracking charge, and bottoms. The cracking unit products will be gasoline, furnace oil, fuel oil, and gas. The bulk of the crude to be charged will be from the San Pedro field at Vespucio. This is a high-gravity crude, averaging 45.5° A.P.I. gravity, with a paraffin base and unusually high gasoline content.

The combination topping, visbreaking, and cracking unit installed at the Mendoza refinery has a capacity of 3,200 bbl. per day. This refinery processes crude oil from the Tupungato and Cachueta areas, the former most prolific of Argentina's new fields. Tupungato crude has a paraffin base and its gravity averages 30.2° A.P.I. The Cachueta crude oil is a mixed-base type of slightly higher gravity.

Both the Salta and Mendoza refineries incorporate clay towers for treating the gasoline. The gasoline is then rerun for the removal of gum. In both these installations, the straightrun and cracked gasoline are stabilized together. All the new units are equipped with Lummus type heaters. The Salta refinery has a two-coil heater with separate heating and soaking sections. In the Mendoza refinery the convection section of a heater is utilized for preheating crude oil.

Completion of this program marks another step toward petroleum self-sufficiency which the Argentine Government has been seeking for some time. Construction of the new refineries was dictated to a large extent by the substantial increase in crude-oil production, particularly in the Province of Mendoza fields. This increase in production has enabled the country to become largely independent of foreign crude oil. According to recent reports, the total crude-oil run to stills in Argentina in 1940 included only 15.4 per cent of imported crude in contrast to 20.4 per cent in 1939. A continuation of this trend will make the country entirely self-sufficient in a few years.

Atlantic's Newest Tanker Launched at Sun Yards

CHESTER, Pa., Mar. 18.—Atlantic Refining Co.'s newest tanker, the S.S. E. H. Blum, was launched here March 15 at the yard of the Sun Shipbuilding & Drydock Co. The vessel, named in honor of E. H. Blum of Dallas, Tex., vice president of the company, was christened by Mrs. Blum.

Addition of the E. H. Blum increases Atlantic's tanker fleet to 24 vessels. The cargo capacity is 154,000 bbl. and it is capable of maintaining a sea speed of 13.25 knots.

Buttram Calls for 1938 Oil-Price Restoration

Restoration of the reduction made in 1938 of prices for crude oil was called for in a statement this week by Frank Buttram, president of the Independent Petroleum Association of America.

"The independent producer was forced then to reduce production in fields outside of Illinois. His market outlet was absorbed by this wasteful production. He might have increased his own production so that volume would make up for the reduction in price. This second course would have wrecked the conservation programs of the states. Therefore, the independent producer in those states accepted the sacrifice although he realized that eventually he must have a proper price or go out of business.

"United States government statistics show that prices of other commodities have been increasing materially while the petroleum price has been decreasing. Thus we are forced to pay more for the commodities and labor we use out of a steadily decreasing return for our product.

"The argument that a low price of gasoline might justify a low price of crude assumes that the producer should pay for the shortcomings of others in the industry and ignores the fact that a low crude price is historically accompanied by an even lower gasoline price and trend.

"Since 1938 our demand has increased 600,000 bbl. per day while our domestic production has increased only 300,000 bbl. Imports have increased about 200,000 bbl. per day which is substantially the decrease in Illinois production since its peak."

Contractors Appoint Brad Mills Secretary

DALLAS, Tex., Mar. 18.—Brad Mills, formerly associate editor of the Oil Weekly, has accepted a position as executive secretary of the American Association of Oilwell Drilling Contractors. He will make his headquarters in the association's offices at Dallas, Tex. J. E. Brantly, president of Drilling & Exploration Co., is president of the association.

BRAD MILLS

Mr. Mills has been associated with the oil industry since 1920, starting in the Salt Creek field, Wyoming. From 1921 to 1927 he was employed in the royalty and production department of the New York Oil Co., dividing his time between field and office work. He became California staff representative of the Oil Weekly in 1927, and was transferred to Houston, Tex., in 1933, where he has headquartered since.

He attended Tulane University, which he entered in 1918, and later, Arkansas State College.

Louark Merges With Carter To Consolidate Production

LOUARK Producing Co., the crude-oil-producing unit of the Standard Oil Co. of Louisiana, will be merged with Carter Oil Co., effective April 1, if necessary legal requirements can be met by that time. The merger, making Carter the dominant wholly owned producing subsidiary of Standard Oil Co. (New Jersey) in the Greater Mid-Continent, was announced March 14 in a joint statement by J. J. Conry, Tulsa, president of the Carter, and J. R. McWilliams, Shreveport, La., president of Louark.

"The Carter Oil Co.," declared the statement, "for many years has engaged in exploration and producing activities in the Mid-Continent and midwestern areas. In the search for additional crude reserves the Carter has been a leader in developing new technical equipment and skilled personnel.

"Through the merger with Carter, Louark will be in a position to utilize its organization in prosecuting more extensive exploration and production work in Louisiana and contiguous territory. On the other hand, by divesting itself of producing interests which are relatively minor as compared to its refining, marketing and pipe-line investments, the Standard Oil Co. of Louisiana will be free to devote its entire energy to these major activities. Also, the Louisiana company's crude-reserve position will be better protected because the Carter organization will be able to build crude reserves behind the Louisiana company's refinery needs more efficiently than has been possible through the smaller Louark organization. As a result, it is confidently expected that the merger will eventually contribute to a substantial increase in oil resources of the State of Louisiana.

"While the Carter, with general offices at Tulsa, will be the continuing company after the merger, its operations in Louisiana, Arkansas, Mississippi and Alabama will continue to be managed from the Shreveport, La., office. The merger may require some adjustments in personnel, in which event the management will adhere to its established policy of retaining all employes with long service and absorbing to as great an extent as possible those other employes with shorter periods of service."

The Louark company was established as a Delaware corporation operating as a producing subsidiary of Standard of Louisiana last year. On September 1, 1940, Louark took over all activities formerly conducted by the producing department of the parent company. Standard of Louisiana is a wholly owned subsidiary of Standard of New Jersey.

Current net production of Louark is between 10,000 and 11,000 bbl. daily, mostly in Louisiana and Arkansas.

Louark's officers, in addition to Mr. McWilliams, are Cecil Morgan, vice president and secretary and V. C. Megarity, treasurer.

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Lend-Lease Bill Defines Oil Products as Defense Articles

By HENRY D. RALPH

WASHINGTON, D. C., Mar. 17.—Petroleum products are now "defense articles" which President Roosevelt may acquire with his $7,000,000,000 appropriation and "lend or lease" to England and other embattled democracies.

No huge increase in petroleum exports in general should be anticipated immediately, but specialty products of high military value such as toluene, aviation lubricating oil, and aviation gasoline and its components, may very likely be acquired by this Government and turned over to Great Britain along with hundreds of other articles for which the Government may be repaid some time in some way.

The president's request for an appropriation of $7,000,000,000, now being rushed through Congress, is broken down into broad categories, one of which is $1,350,000,000 for "agricultural, industrial and other commodities and articles." That this may very well include petroleum products is shown by the definition of "defense article" in the lend-lease bill, H.R. 1776. This definition includes any material or supply necessary for the servicing or operation of any weapon, aircraft or vessel, or any other article or commodity for defense.

Private purchases of American petroleum products for commercial use in England, Canada, and other parts of the British Empire probably will continue about as before, and the British Government can continue to buy oil directly from producers if it has the necessary dollar exchange, but if the British need petroleum products for military purposes and make the request to the president, this Government can and undoubtedly will acquire them and transfer them to the British. England probably will continue to take as much of her oil as possible from her own possessions in the Near East if transportation routes can be kept open, and is expected to continue to purchase in the Caribbean area, but the shorter haul from United States ports and the availability of specialty refined products may become the deciding factor.

How to get the oil products to England is a big problem. The British are asking for ships, and United States officials say we can spare none, but if the request is sufficiently urgent and persistent the expectation is that the president will find a way to transfer some vessels to British registry, and this may well include tankers. Navy officials are already investigating the possibilities of purchasing or building new tankers for replacement in case some of the tankers now in the Navy's auxiliary fleet are transferred to England.

The definition of aviation gasoline used in the Department of Commerce export figures includes anything which the exporter declares as such, and much of it may be less than 87 octane, which is the definition used by the State Department in issuing export licenses. However, gasoline of lower octane can be brought up to the grade used by British planes through the use of tetraethyl lead and blending agents. No export figures are available for tetraethyl lead because there is only one manufacturer and to avoid disclosing individual business figures this product is lumped with others. Last year, however, the Department of Commerce began segregating exports of antiknock compounds of petroleum origin, all of which are useful in producing aviation gasoline of high grade. In 1940 the exports of these compounds to the United Kingdom were 41,429,945 gal., and to Canada 969,067 gal. An indication that such exports are jumping rapidly is shown in the figures for January 1941, the latest available, when 7,904,032 gal. were exported to the United Kingdom and 459,504 gal. to Canada.

The State Department's definition of aviation motor fuel for purposes of export-license control includes all such blending agents and all petroleum products containing appreciable amounts of them. General licenses have now been issued to the British Purchasing Commission to export aviation motor fuel and aviation lubricating oil to practically all parts of the British Empire. A similar general export license has been granted on toluene, an ingredient of TNT, though most of the toluene exported is probably a coke-oven byproduct rather than of petroleum origin.

Joseph E. Moorhead, executive secretary of the Pennsylvania Grade Crude Oil Association, and Dean Edward Steidle, of Penn State School of Mineral Industries, examine the oil industry's first petroleum still, the invention of Samuel Kier, in 1854. It was recently given to Pennsylvania State College and will be preserved in the mineral-industries museum

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Believe Justice Department Expects Early Settlement Of Antitrust Case

WASHINGTON, D. C., Mar. 17.—Evidence that the Department of Justice expects an early settlement of the antitrust case against the American Petroleum Institute and 22 major oil companies is seen in the order of Judge T. Alan Goldsborough in the federal court for the District of Columbia postponing until May 1 the time for filing answers to the Government's bill of complaint.

The time for filing answers had already been extended once and answers were due on April 1, but recently attorneys for the majors have been conferring with officials of the Antitrust Division in an attempt to settle the case by negotiation without going to trial. Unless the department anticipates concrete results from these negotiations it is improbable that it would have agreed to a further postponement request by the defendants.

First suggestion that the department was willing to compromise and settle the case by a consent decree came from department officials when some of the attorneys for the major companies called to inquire informally about the meaning of some of the language in the complaint. Following this hint, a committee of attorneys was appointed to conduct negotiations. The first meeting at the department followed the almost traditional pattern of such negotiations. The government men outlined a proposed consent decree asking for practically everything sought in the bill of complaint, but this was flatly rejected by the oil attorneys as being impossible and unthinkable; the oil men then made a counterproposal which the department attorneys immediately threw out as tantamount to dismissing the case. With these routine formalities out of the way, the spokesmen for the two sides of the case are now engaged in a point-by-point discussion and horse-trading type of talking across the table.

Since neither side will state publicly just what is the least it will take on a final showdown, it is impossible to predict what sort of terms may be reached, if any agreement results, but the negotiators are hopeful that a settlement will be worked out in the comparatively near future.

STATE CAPITALS...

ILLINOIS

REP. LLOYD HARRIS of Granite City, Ill., will introduce a bill this week asking proration and regulation. The measure, which will not be supported by the administration, calls for appointment by the governor of a three-man commission with 6-year terms, employment of a technical staff, and a minimum of 20 bbl. per day from "slow-flowing" wells. The bill will empower the commission to limit the "total amount of oil or gas which each well may produce and allocating allowable production of each." The board would be authorized to investigate "waste" and to set up its own rules for regulation of oil and gas production.

A bill calling for the state's continuation in the interstate oil compact with Texas, Oklahoma, California, Kansas, and New Mexico for 2 years passed the house March 12 by a vote of 109 to 1. The measure is slated to be approved by the senate within the next 2 weeks without opposition. Immediately thereafter, Governor Green is expected to name a representative to the commission.

A bill requiring operators to pay a fee of $100 for each drilling permit secured from the state Department of Mines and Minerals has been introduced.

Although Gov. Dwight H. Green declined to comment on the measure, it was reported administration leaders will oppose the bill as "unwarranted."

Rep. Paul Powell, of Vienna, announced he will introduce a bill this week to place meters on all Illinois oil and gas wells as a safeguard for landowners. Mr. Powell has already introduced bills for taxing oil production 5 cents per barrel and gas production 5 cents per 1,000 cu. ft. The meters, he said, would aid in collection of taxes.

OKLAHOMA

EVIDENCE WILL BE RECEIVED by the Corporation Commission March 25 at a state-wide proration hearing in Oklahoma City, Okla., upon which to base a 3-month proration order covering April, May, and June.

Earlier, the commission will seek views of operators on whether the well-spacing should be amended to permit drilling wells other than in the center of units. Earl Foster, conservation attorney, contends it is the intention of the law to permit the commission to fix the drilling unit and designate the exact well location. Evidence would be presented at the hearing to permit the commission to grant "offside" locations and for establishing an allowable factor for such wells.

SOUTH DAKOTA

A MORE MODERN conservation law was enacted to replace a sketchy oil and gas code in effect since 1919 and a new policy was adopted with regard to the leasing of state lands administered by the commissioner of school and public lands as the chief features of action by the South Dakota Legislature of interest to the oil and gas industry. The legislature adjourned March 7 with the public land-leasing bill as one of the last measures to receive favorable consideration.

The new Conservation Act is closely modeled after the Alabama act in its principal provisions. An ex officio board consisting of the governor, attorney general, and state engineer will administer the act.

Leasing activity in South Dakota which has been in progress during the winter months is expected to proceed at an even faster pace as result of the new legislation. Announcement of a new test of the Glendive anticline to be made in southeastern Montana by the Carter Oil Co. has served to revive interest in the northwestern part of South Dakota, where three domes have been mapped on the anticline by the U.S.G.S., although principal interest continued to be in Central South Dakota, where additional exploration is expected this spring.

ARKANSAS

THE REGULAR SESSION of the General Assembly adjourned on March 13 after modifying the state's Conservation Act and enacting other statutes of interest to the oil industry.

Two amendments to the Conservation Act concerned gas and spacing. Senate Bill 263 defining sweet, sour, dry and casing-head gas was included in the law. Senate Bill 317, granting an extra 10-acre concession in the spacing of oil wells, modifying the former section of the act, limits the spacing unit of an oil well to 40 acres. The new law will provide for special cases where strict 40-acre spacing is proven inadequate.

A bill was passed requiring 100 per cent tank-table measurement of crude oil, but the proposed legislation to increase the oil-severance tax failed.

The bill proposing the establishment of the Ouachita Valley Authority was not enacted. This bill attracted considerable attention, since it would empower the state to purchase gas for use in generation of electric power. Senate hearings on the bill in Little Rock early this month created much interest, since they brought out testimony concerning the treatment of the sour gas for power use and the utilization of the high hydrogen sulfide content for byproduct manufacture.

GOV. HOMER M. ADKINS will be honor guest at Magnolia March 21 at the state-wide hearing of the Oil and Gas Commission. The day has been proclaimed Governor Adkins Day, and tours of oil fields and executive sessions of the Oil and Gas Commission and the state Utilities Commission will be highlighted.

COMPLETES SURVEY . . .

DR. PARKE A. DICKEY, geologist of the Pennsylvania Topographic and Geologic Survey, has completed a survey of the Titusville Quadrangle. He will discuss some of his conclusions at a meeting of Pennsylvania producers in Washington, Pa., March 27. Dr. Dickey has served with Lago Petroleum Co. as petrographer at Maracaibo, Venezuela, and with the Tropical Oil Co. at Barranca-Bermeja, Colombia. He has been engaged in Pennsylvania survey work since 1938 when he returned from South America

TEXAS

DUAL COMPLETIONS in the Hawkins field, Wood County, Texas, have been authorized by the Railroad Commission. An operator may complete his well so as to permit production of oil from the Woodbine sand through the tubing and gas from the sub-Clarksville through the annular space between the tubing and casing. Production of oil and gas simultaneously is prohibited. Withdrawal of gas is limited to 90 days and it may be used only to supply fuel to Hawkins field drilling operations and to supply domestic demand in the townsite and immediate vicinity. Dual-completed wells may be converted from gas to oil producers at any time within the 90-day period.

HEARINGS WILL OPEN MARCH 24 before the senate oil, gas and conservation committee on a bill authorizing the Railroad Commission to regulate production of condensate and distillate wells.

BOTTOM-HOLE PRESSURE in 97 test wells in the East Texas field in the March survey averaged 1,050.45 lb., compared to 1,050.93 lb. by the same method of computation in February.

DEADLINES OF APRIL 15 AND 25 have been set for various parts of the state for well-status reports from operators required in a recent Railroad Commission order. Every operator in the state is required by the order to report the status of each well in an affidavit to the commission. Panhandle reports are due April 25 and those from other fields must be made by April 15.

RENEWAL OF PARTICIPATION in the interstate oil compact for a period of 2 years was assured last week when the senate gave unanimous approval to a house-initiated bill.

J. C. Hunter of Abilene, working through Sen. Allan Shivers of Port Arthur, succeeded in obtaining action out of the regular order of business as a gesture to show federal authorities that Texas is united in opinion that the compact is the desirable method of conserving oil and gas. Mr. Hunter is the Texas represenative on the Compact Commission serving by appointment of Gov. W. Lee O'Daniel, who signed the bill March 14.

MISSISSIPPI

TINSLEY FIELD REGULATIONS were extended last week by order of the state Oil and Gas Board to incorporate 6,400 additional acres south of the present proven limits. H. M. Morse, Jackson, Miss., state oil and gas conservation supervisor, said the new acreage extends the area of the Tinsley conservation district to 28,160 acres. Proven area covers about 6,000 acres, Mr. Morse said.

KANSAS

THE APRIL PRORATION ORDER will be based on testimony presented before the Corporation Commission at a state-wide hearing in Wichita, Kans., March 28. The current state allowable is 198,200 bbl. daily. During the week ended March 15 there were 33 new oil wells completed with a rated potential of 40,353 bbl. daily, compared with 27 new wells the preceding week with a total potential of 24,644 bbl. daily.

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Price Control

The head of the Price Stabilization Division of the Defense Commission in a recent address before a Chicago group listed petroleum as one of the industries in which there was no danger of spiraling prices. The thought back of this statement was that in many industries, a rapid expansion in production will quickly end any tendency toward unwarrantable high prices for raw materials or finished products.

In the case of the petroleum industry it was explained that "little gadgets which they insert into oil wells to control the flow of oil" could be adjusted to increase the output of crude oil and thus cause gasoline prices to crumble.

The speaker did not infer that the present prices for gasoline and other refinery products were excessive nor was there any indication that his commission would oppose advances to levels assuring reasonable profits for all operating divisions.

It is inconceivable that any responsible agency of Government would take advantage of the strong operating position of this industry and others and use their capacity to produce as a means of destroying them. The backbone of this country's unparalleled industrial development has been the fact that its major enterprises have kept ahead of demand. Their operations in both good and bad times have anticipated, not followed, the needs of consumers.

The significance of this situation to the nation has been outstanding in recent months. To take care of defense needs and the many war requirements of non-Axis powers, industry has expanded its output by leaps and bounds and it is still providing the country with the normal domestic requirements.

Industry has been able to do this because it has excess capacity and the management personnel around which additional facilities can be built quickly.

Petroleum's redundance is typified in its present ability to increase its raw-material output to meet any possible demands. It continues on through the industry in the excess capacity of transportation systems and the equipment to enlarge refinery operations.

The speaker did place his finger on something, the importance of which too many producers, refiners and marketers do not realize. The "gadget" or valve at the well protects the consumer of petroleum products from high prices. Therein also lies the industry's own control of its operations.

Operators and the state conservation bodies have in the past often opened the valves too far. That happened last year and that is the main reason why the industry now has the immediate problem of getting its gasoline prices back to profitable levels.

The military and civilians will have all the petroleum they need so long as the industry operates on a conservation basis and finds more oil than is needed currently. But this method of operation is increasingly costly and will end if it represents nothing but losses or meager net profits.

The federal Government is not going to do anything about this. It assumes that the industry will so conduct its operations that returns are adequate but not excessive.

Responsibility within the oil business in this situation is spread rather evenly. It goes back to the drilling of unnecessary wells, the nominations for crude, state divisions of outlets and refining rates and methods. But in the end it is all checked back to the flow from producing wells.

It would seem that operators supported by the state conservation departments, collectively should have the understanding of a governmental stabilizer and, realizing where the control lies, act accordingly.

The Annual Statements Say . .

THE less generally known details of operations as disclosed by the annual reports and unique methods of presenting information to stockholders and employes will furnish the nucleus for this digest. It will be continued through the annual-report season.

The Texas Corp.

PROPERTY and inventory losses of European subsidiaries because of the war amount to at least $1,300,000. A reserve of $7,000,000 has been provided against actual and possible losses, $4,000,000 of which was added in 1940 alone.

A sulfuric-acid alkylation plant, similar to one placed in operation at Port Arthur, Tex., in 1939, is nearing completion at the company's Los Angeles, Calif., refinery, construction of which was dictated largely by the defense requirements for aviation gasoline.

California Arabian Standard Oil Co., owned jointly with Standard Oil Co. of California, completed a 3,000-bbl. refinery last November at Ras Tanura on the Persian Gulf Coast.

The previously unamortized balance and all intangible development costs incurred during 1940 in Illinois have been charged to operating outlay because lack of conservation surrounds the future with unpredictable hazards.

Union Oil Co. of California

A CATALYTIC cracking plant and a wax unit are under construction at the Oleum, Calif., refinery where the capacity of other units will be increased this year and a new administration building completed. The company spent $4,642,624 on refinery construction in 1940. Added were an alkylation plant at Wilmington, Calif., refinery and a polymerization plant at Oleum. Started in 1940 but carrying over for completion this year is a distillation plant that will process low-gravity, high-sulfur crudes at Oleum involving a coking process.

Atlantic Refining Co.

AN innovation in streamlining its annual report was introduced this year, packing all pertinent information into the following table:

THE STORY IN BRIEF

	1940	1939
Gross operating income	$134,169,224	$126,902,685
Net income	6,219,355	5,028,212
Profit per dollar of gross operating income (cents)	4.64	3.96
Total net worth	162,033,140	159,456,671
Book value per share — Preferred stock $100 par	1,094.80	1,077.39
Earned per share — Preferred stock	42.01	33.94
Dividends per share — Preferred stock	4.00	4.00
Book value per share—Common stock $25 par	55.27	54.30
Earned per share — Common stock	2.11	1.66
Dividends per share — Common stock	1.00	1.00
Taxes per share of Common stock	2.68	2.08
Total dividends paid	3,257,820	3,261,386
Taxes paid or accrued	7,148,568	5,552,648
Payroll	24,705,306	23,708,193
Taxes paid per employe	572.21	455.43
Capital invested per employe	12,970	13,100
Number of employes (average)	12,493	12,192
Number of stockholders (Preferred)	4,458	4,607
Number of stockholders (Common)	29,056	29,154
Gallons of products sold	1,464,700,000	1,421,103,000
Crude oil produced (bbl., 42's)*	13,496,000	13,052,000
Crude oil purchased (bbl., 42's)	36,714,000	34,504,000
Crude oil run to stills (bbl., 42's)	37,834,000	37,269,000
Crude oil transported by pipe line (bbl., 42's)	36,827,000	36,561,000
Products transported by pipe line (bbl., 42's)	14,437,000	14,535,000
Refinery daily crude-oil capacity (bbl., 42's)	110,600	105,600
Refinery daily crude-oil runs (bbl., 42's)	103,000	102,000
Inventories—crude and refined oil (bbl., 42's)	13,143,000	11,876,000
Wells drilled—oil or gas	145	94
Wells drilled—nonproductive	28	26
Wells operated—December 31	2,144	2,037
Acreage of oil rights—domestic	1,171,000	755,000
Acreage of oil rights—foreign	7,246,000	2,904,000
Miles of crude pipe lines	1,508	1,489
Miles of product pipe lines	817	817
Number of seagoing tankers	23	24

*Exclusive of oil accruing to outside interests and royalty holders.

The catalytic cracking plant at Point Breeze, Pa., on the refinery-construction program for 1941 is a process disassociated with either of the two now in commercial operation or previously announced.

Three other refinery units including an aviation-gasoline plant at Point Breeze, a plant at Atreco, Tex., for improving motor-fuel quality, and another crude-distillation unit complete with desalting, catalytic desulfurization and hydrogen-sulfide-disposal equipment will cost $4,500,000. The total 1941 refinery-expansion program calls for outlay of $7,750,000, nearly three times the refinery investment in 1940.

Total expenditures of $17,287,000 in 1940 break down as follows:

Production	$6,034,000
Transportation	3,529,000
Refining	2,680,000
Marketing	4,978,000
Other	46,000

Sun Oil Co.

NEW investments by Sun Oil Co. and its subsidiaries last year in various departments of the business totaled $20,029,185 in the following breakdown:

Production	$3,613,972
Vessels	3,803,809
Refineries	7,487,010
Marketing	3,538,026
Shipyard	1,426,875
Miscellaneous	159,493
Total	$20,029,185

Sun Shipbuilding & Drydock Co., wholly owned subsidiary, had under contract at the start of this year 32 tankers and 4 passenger-cargo vessels for commercial purposes. Three destroyer tenders and three seaplane tenders are under contract for the U. S. Navy.

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OIL-COMPANY ANNUAL REPORTS

(Compiled by Carl H. Pforzheimer & Co., New York)

	Net income	Earned per share
Sun Oil Co.:		
1940	$7,969,068	$3.09
1939	6,959,677	2.74
Standard Oil Co. of Ohio:		
1940	6,209,008	7.44
1939	5,602,499	6.64
Atlantic Refining Co.:		
1940	6,217,453	2.11
1939	5,023,282	1.66
Plymouth Oil Co.:		
1940	1,442,739	1.38
1939	2,475,052	2.38
Houston Oil Co.:		
1940	870,557	0.30
1939	1,010,531	0.43
Union Oil Co. of California:		
1940	4,606,790	0.99
1939	5,846,241	1.25
Pacific Western Oil Corp.:		
1940	212,986	0.21
1939	813,689	0.81
Pure Oil Co.:		
1940	8,718,057	1.21
1939	8,290,418	1.11
Columbia Oil & Gasoline Co.:		
1940	1,411,234	0.13
1939	434,962	0.07
Texas Gulf Producing Co.:		
1940	559,952	0.63
1939	614,670	0.69
Standard Oil Co. of Kentucky:		
1940	3,818,408	1.47
1939	3,979,562	1.53
Phillips Petroleum Co.:		
1940	11,590,318	2.61
1939	9,833,314	2.21
Skelly Oil Co.:		
1940	3,316,678	3.28
1939	2,360,783	1.99
Wilcox Oil & Gas Co.:		
1940	165,035	0.35
1939	361,261	0.77
Lion Oil Refining Co.:		
1940	456,873	1.05
1939	652,362	1.50
Kirby Petroleum Co.:		
1940	80,229	1.16
1939	30,494	0.06
Total 16 companies:		
1940	$57,219,413	
1939	54,288,777	

Oklahoma City Unitization Efforts Stalled by Many Technicalities and Delays

OKLAHOMA CITY, Okla., Mar. 18.—Early attempts of the Oklahoma City Wilcox secondary-recovery committee to win support of the oil industry for proposed legislation to unitize the Oklahoma City pool for secondary-recovery operations stalled last week over the countless details and technicalities involved.

At a small luncheon meeting of the Oklahoma City Geological Society early in the week, Robert M. Williams, attorney for the committee, attempted to explain the purpose and effect of the bill but soon found himself bogged down in explaining background.

Then he appeared a second time before the society at a luncheon meeting, but again was halted halfway through his discussion of the bill by a bombardment of questions from the audience. One of the listeners expressed the attitude of most when he said: "The lawyers and engineers of the secondary-recovery committee have had 2 years to study this problem, and it looks as though it is going to take 2 years more for the rest of us to become familiar with it."

Immediately after he met with the geological society, Mr. Williams drove to Wewoka, Okla., and appeared before representatives of the operators in the Greater Seminole area, many of whom are interested.

Biggest single problem seemed to arise from the multiplicity of owners and interests, many of whom are entirely unfamiliar with actual oil-field practices. Also a serious problem was the fact that many of the operators, both large and small, are unfamiliar with legal details and insist upon a full explanation of how the bill, as it is now proposed, would affect their individual interests.

In its present form, the proposed bill would be limited in its application to the Oklahoma City pool. It would empower the state Corporation Commission to organize a secondary-recovery unit which would be operated by a corporate body with the right of eminent domain and the power to sue and be sued.

Individual operators and participating interests were struck particularly by that section of the proposed bill which would cause them to turn over the operation of their property to the operating unit. So far-reaching did the proposal appear in its implications that the more opportunity was given for discussion, the more the industry puzzled. No attempt had been made at week's end to introduce the bill in the state legislature.

Pipe-Line Bill May Go Before Georgia Senate

A committee of the Georgia Senate this week considered introduction of the pipe-line right-of-way bill which received a negative vote in the house March 5. On March 6 the house refused a motion for reconsideration.

It is reported that the governor did not exert influence for or against the bill while it was considered by the house. At this time when the senate committee is considering the bill, it is reported that the governor is definitely behind the bill. It is believed that the house will pass the bill if the senate takes favorable action.

This bill will cure a defect in the pipe-line right-of-way law now on the statutes. Because of this defect, Southeastern Pipe Line Co. (Gulf and Pure) has been unable to complete the 450-mile gasoline pipe line from Port St. Joe, Fla., to the state line near Chattanooga, Tenn. With the exception of numerous gaps at railroad and highway crossings, nearly all of the line has been laid. Obstruction by railroad interests prevented the laying of pipe under highways and railroads. At present the line is in operation between Port St. Joe and Bainbridge, Ga. Curing of this legal defect is also important for carrying out the plans of Plantation Pipe Line Co. (Standard of New Jersey and Shell) for the construction of a gasoline pipe line between Baton Rouge, La., and Portsmouth, Va. The administration at Washington has emphasized the importance of these two pipe-line projects in the national-defense program in statements made by President Roosevelt, Secretary Knox and Secretary Ickes. Chairman Cole has brought the matter before his committee for consideration.

Federal Control Plan Includes Section on Oil Industry

By HENRY D. RALPH

WASHINGTON, D. C., Mar. 17.—Federal control of the oil and gas industries for purposes of overall national economic planning as well as immediate conservation was recommended in a report sent to Congress today by President Roosevelt.

The report was prepared by the National Resources Planning Board, now a unit in the executive office of the president, and in general its recommendations as to oil follow those made in a special energy report made by the old National Resources Committee 2 years ago. The new report, however, lays great stress on the need for control of the industry as a measure of national defense and to stabilize national economy during the present emergency and in the postemergency readjustment period.

The title of the report is "Development of Resources and Stabilization of Employment in the United States," and much of it deals with a continuing and long-time program of public works to stabilize employment and provide public improvements.

The planned regulation of business activities and utilization of resources is stressed throughout the report as being essential to make the nation strong for national defense and able to withstand postwar conditions. The whole report is predicated upon the assumption of planned economy directed from Washington.

Fitting the oil and gas industries into this broad picture, the Planning Board recommends, among other things:

Immediate emergency powers to control the allocation of production and refining.

Immediate control of the prices of petroleum products in relation to other fuels.

Creation of a federal agency to administer conservation of oil and gas.

Expansion of military petroleum reserves.

Curtailment of expansion of commercial production.

Greater imports of foreign oil.

Steps to prevent the use of oil and natural gas for purposes where other fuels may be substituted.

The oil section of this report probably will be placed before the House subcommittee on petroleum which will reopen hearings March 27 on the Cole bill, the pipe-line situation, and other conservation and defense aspects of the entire petroleum industry.

The petroleum and gas section of the report is part of a chapter on functional development policies which the federal Government ought to adopt. As to energy resources in general the report declares:

Energy Resource Policies

The states and the federal Government, without much attention to coordination, have introduced various measures aimed to facilitate wise use of energy resources. In the main, each of these efforts has been directed toward a single group of problems—the correction of demoralizing and wasteful practices and conditions in the petroleum and natural-gas industries, the relief of economic distress and the promotion of safety in coal mining, or the protection and development of the public interest in water power. It is time to take a broader view. It is time to recognize more fully that these problems interlock. to weigh the conflicting interest and the differing points of view, and to resolve these conflicts in the interest of a national economy based on large-scale use of low-cost energy. . . .

In the utilization of energy resources, the profit motive has led to increased efficiency because consumers of fuels find it to their interest to make their purchases go further. In production and distribution, however, private gain has not proved an adequate stimulus for all the needs of conservation and, in fact, may be the chief cause of wasteful exploitation.

In the petroleum industry, for example, public action is apparently compelled because private enterprise, unaided, cannot deal with the problem of waste. Investment capital, reservoir energy, and petroleum reserves have been wasted as a result of efforts to obtain quick profits. Much of the responsibility for corrective action rests upon the federal Government.

Underlying Objectives

The underlying objectives are stated in broad terms as follows:

1. The program should strengthen the national economy for peace or war through greater efficiency in production and greater economy in the use of mineral fuels; using where possible bituminous coal, of which there is an abundance in the ground, and water power which is wasted if not used; reserving where possible the meager known supplies of petroleum and natural gas for special duties to which they are essential.

2. The program should advance the public welfare and improve the living standards of the people through more efficient production, distribution, and utilization of an increased supply of energy; through the use of fuels and of water power for the purposes to which each is especially adapted; through protecting and improving labor standards and stabilizing employment in the energy-resource industries, and guiding into less wasteful channels the inevitable competition of one resource with others.

3. The program should provide for continued investigation and planning by public and private agencies toward these objectives, emphasizing that immediate measures will be most effective for the emergency if they are also permanent foundation stones for long-range plans.

After discussing coal and water power, the report makes the following specific recommendations as to oil and gas:

Petroleum products are absolutely essential to the national defense. Immediate steps are necessary to establish emergency powers adequate to control the allocation of production and refining among the various districts and to control the prices of petroleum and its products in relation to other fuels. Such emergency powers should be framed after reappraising the powers and forms of organization of the existing regulatory agencies, including those dealing with production, transportation, and marketing.

Creation of a federal oil-conservation body is recommended to administer the interests of the United States as a whole in oil and gas, to cooperate with the states in protecting the nation against waste, and otherwise to pursue the objectives here stated.

For emergency purposes, there should be up-to-date estimates of requirements for oil and gas, these estimates to be used in controlling the development and extraction of reserves that are suitable for products of special military significance. Attention should be given to the desirability of expanding the military reserves and to their protection from commercial exploitation. The expansion of commercial production to meet emergency needs should be carefully planned to avoid waste and to minimize postemergency disturbances.

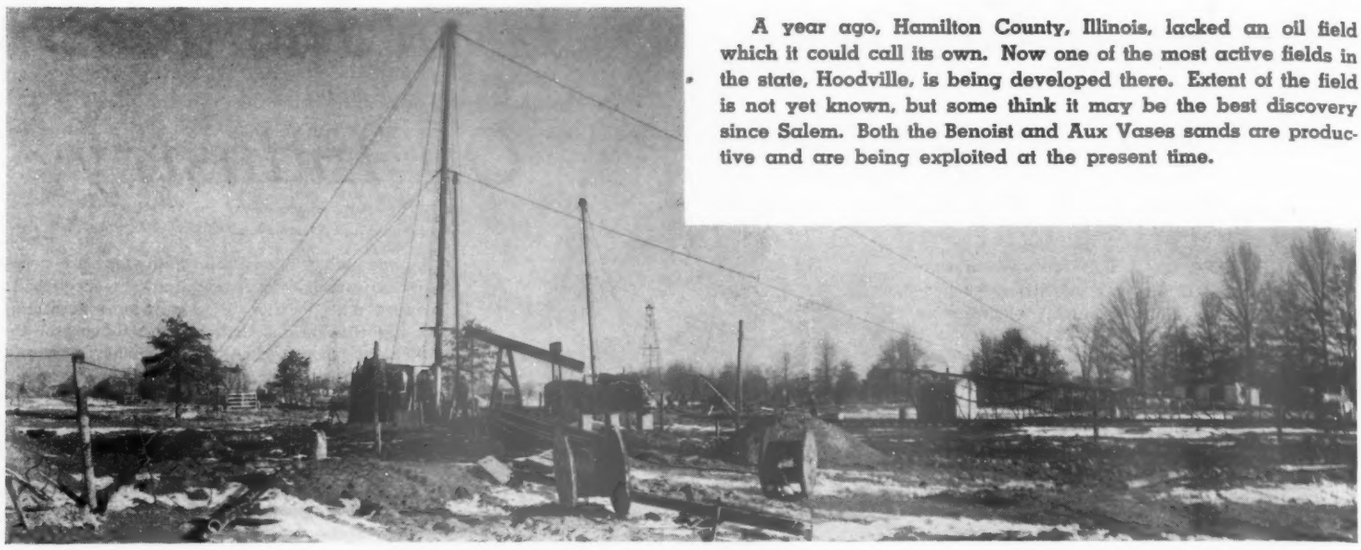
Favorable Import Policy Recommended

A policy favorable to imports is recommended, particularly for grades of crude oil not readily available in the domestic market.

In the longer view and in designing emergency measures as parts of a long-range plan, the peculiar dependence of transportation motive power on petroleum products should be clearly realized. These mobile uses are compelling reasons for more efficient production and use of oil. The limited quantities of proved reserves in relation to sharply increasing consumption should be emphasized; the danger of an actual lack is not imminent, but the prospect of definitely higher costs in world trade is not far off.

Overproduction and waste of oil should be studied in relation to its distribution and to its consumption for less essential purposes. Those uses of petroleum for which available substitutes are relatively costly—notably lubricants and gasoline—should be protected. The use of oil and natural gas should be discouraged wherever heat or power from other sources is suitable and economic and where the factor of convenience is not important.

In the production field, it is essential for the federal Government and the states together to devise, adopt, and enforce methods leading to more stability as well as to less waste and conflict. Unit operation of petroleum pools is desirable, and to this end it is recommended that direct and indirect means be adopted for stimulating the pooling of lease and royalty interests. The principle of correlative rights and of ownership in place should be substituted for the "rule of capture"; to encourage this, better methods for measuring underground reserves should be found. The problem of regulating production in fields located far from adequate markets should be attacked.



A year ago, Hamilton County, Illinois, lacked an oil field which it could call its own. Now one of the most active fields in the state, Hoodville, is being developed there. Extent of the field is not yet known, but some think it may be the best discovery since Salem. Both the Benoist and Aux Vases sands are productive and are being exploited at the present time.

The railroad right-of-way through the heart of the Hoodville field has caused some competitive drilling

Hoodville Field Holds Attention Of Illinois Operators

By HARRY F. SIMONS

McLEANSBORO, Ill., Mar. 18.—The Hoodville pool in Hamilton County, Illinois, a discovery of last year, is making a bid to become the best field found since the rich Salem pool was uncovered in Marion County in 1938. At the present time the production from the pool is in excess of 12,000 bbl. daily and is mounting due to the completion of new wells as the exploitation campaign proves up more acreage. The pool is located in the south central portion of Township 5s-6e and the north central part of 6s-6e, about 3 miles south of the town of McLeansboro.

At the present time there are about 90 wells in the field, active operations totaling 25, with 21 of these drilling. A survey made several weeks ago when there were 80 wells in the field showed the following distribution of wells and production:

Company—	Wells	Production
Carter Oil Co.	3	383
Exchange Oil Co.	23	1,913
Gulf Refining Co.	6	476
Kingwood Oil Co.	6	520
W. C. McBride, Inc.	3	82
Ohio Oil Co.	6	808
Shell Petroleum Co., Inc.	8	1,279
Texas Co.	14	1,183
Independents	11	719
Total	80	7,363

The production from the field is purchased by the Sohio Pipe Line Co., Illinois Pipe Line Co., Hal Compton Crude Oil Purchasing Co. and the Marimac Pipe Line Co. Both Illinois and Sohio have lines into the field while Compton and Marimac ship by tank car.

Hoodville is located along a line of pools extending southeastward from the Salem field in Marion County to join a similar line extending southeastward from the Griffin field in Wabash County. Roughly this line of fields parallels the southern rim of the basin. The area attracted the attention of major companies before development actually got under way in Illinois in 1937 and as early as 1938 large blocks of leases were taken. Principal companies interested in the Hamilton County development include Texas Co., Shell Oil Co., Inc., Carter Oil Co., Gulf Refining Co., Ohio Oil Co., Magnolia Petroleum Co., Tri-State Investment Co., Illinois-National Refining Co., Exchange Oil Co. and Tide Water Associated Oil Co. Independents hold scattered leases throughout the county but the bulk of the leases belong to the major oil firms.

First production in Hamilton County came as a result of the southward extension of the Aden field, which was discovered in Wayne County in 1938. The county's first discovery was by the Kingwood Oil Co. when it found the Cypress sand productive in what is now the Dale pool in Township 6s-7e, about 5 miles east of the Hoodville field. The Dale discovery started an active wildcatting campaign which was encouraged by the successful completion in the McClosky lime in the Kingwood 1 Prince in 31-5s-7e. To date no successful offset has been completed to this well. Several failures in the vicinity temporarily gave a discouraging tone to the picture until Kingwood successfully completed the Hoodville discovery.

Two-Sand Production

Production in the field is from the Benoist and Aux Vases sands with both being fairly continuous. In this respect the Hoodville pool resembles the Salem field to the north rather than the White County fields to the east where production is obtained from numerous but rather discontinuous zones.

The discovery well in the field, Kingwood Oil Co. 1 Morris, SW SE NE 34-5s-6e, was originally completed in the McClosky lime at 3,189-3,200 ft. After acidizing with 3,000 gal., the well flowed 234 bbl. in 6½ hours and then died. After dwindling to almost nothing, the well was plugged back and a test made of the Fredonia lime, topped at 3,154 ft., by perforating the casing. In the Fredonia the well was reported as making 112 bbl. in 21 hours, but it also dwindled away and the well was plugged back and the removable pipe section run opposite the Benoist sand at 2,947-78 ft., was cut out. After acidizing with 2,000 gal., the well made 353 bbl. in 24 hours and was classed as a completion. Removable pipe was also run in the discovery well opposite the Weiler sand at 2,753-73 ft.

Since the discovery well several attempts have been made to obtain production from the McClosky in some other wells, but in each case a failure resulted and the wells were plugged back and opened opposite either the Benoist or Aux Vases sand. The Benoist is found at depths ranging from 2,931 ft. in Exchange 9 Friel A, SW NE SE 34-5s-6e, to 2,983 in Exchange 7 Friel B, NE NE SW of the same section. The terrain in the vicinity is quite rough in some sections and flat in others and on the top of the structure the subsea depths to production run fairly even. The Aux Vases sand runs a little over 100 ft. deeper than the Benoist, generally being encountered between 3,030 and 3,050 ft.

Initial production of the Benoist wells in the pool averages 200 bbl. per day while the average initial of the Aux Vases wells is around 250 bbl. per day. The Benoist pay averages 18 ft. in thickness and varies from 9 ft. to as much as 25 ft. The Aux Vases pay thickness varies from 7 to 30 ft. and averages 15 ft. Indication that a third sand zone may be productive is given by the fact that Exchange Oil Co. also ran a removable pipe section opposite the Weiler sand at 2,769-89 ft. in its 3 Friel B, C WL NW NW SE 34-5s-6e.

Most companies have run 7-in. casing to the top

(Continued on Page 38)

Reducing GAS Storage Space 600 Times!

In East Ohio Gas Company's new gas liquefaction plant at Cleveland, natural gas is changed to a liquid and stored in one six-hundredth its original space! Three Cooper-Bessemer "angle" and "V-angle" compressor units . . . with automatic speed control and compressor cylinder unloading . . . are an important part of this unique new plant!

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Box 1586, Pampa, Texas
631 Spring St., Shreveport, La.
640 E. 61st St., Los Angeles, Cal.

(Continued from Page 34)

of the Benoist pay, setting it about 1 ft. in the top of the sand. Some operators have run 5 and 5½-in. pipe to the top of the Benoist or through the Benoist to the top of the Aux Vases. Where smaller strings of pipe are run to the Aux Vases sand, a removable section is generally included opposite the Benoist. The Aux Vases wells equipped with 7-in. casing may or may not include a removable section.

Two-Zone Completions

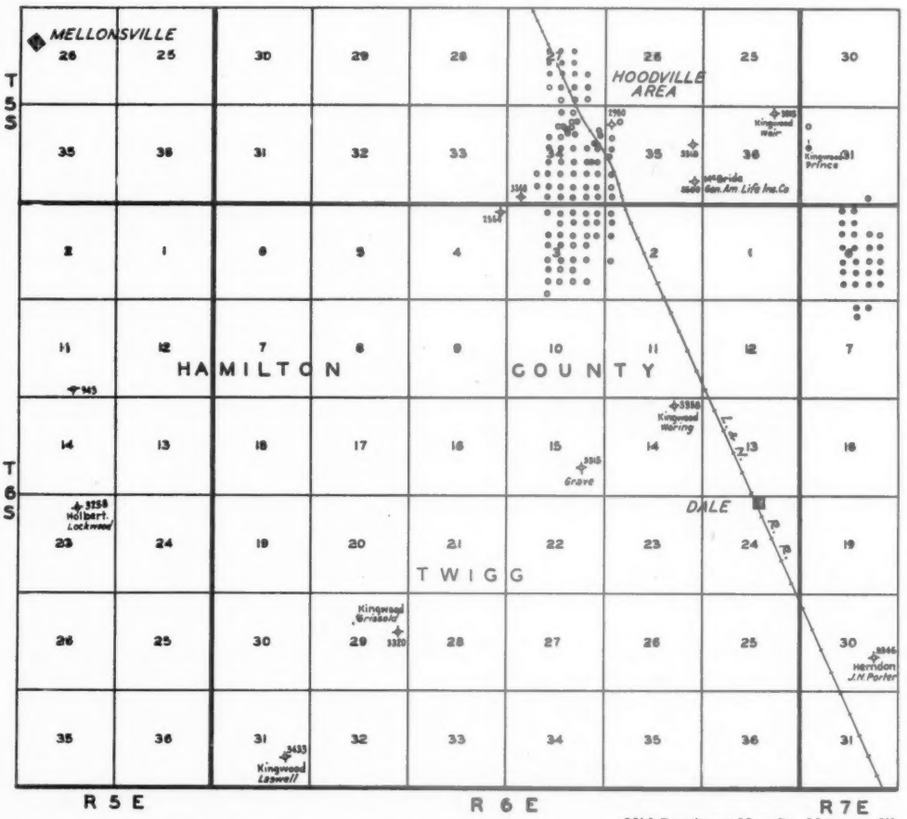
Completion of two zones in one well bore has attracted the attention of the operators but complications have arisen in several cases. Wells completed in the Benoist originally and then deepened to the Aux Vases with cable tools generally encountered considerable trouble, and difficulty was also experienced in getting the liner in the hole. At the present time one company is trying a new method, the pipe with removable section being set on top of the Aux Vases sand and the well completed in the lower horizon with cable tools; after testing the lower pay, the pipe is bridged and the window cut opposite the Benoist with a rotary rig. There are about a dozen wells producing from two zones.

Drilling in the field resembles other Illinois fields of similar depth. There is only a slight tendency to lose mud at several points and some difficulty is experienced with sticking pipe in the Chester sands. The holes require from 15 to 21 bits to drill, depending on the efficiency of the operator, the quality of the bits and care taken in selecting the bit to be used. Bits designed for broken formation are used most successfully in the field. While this is the greatest depth at which the Benoist has been found productive in Illinois, deeper Aux Vases sand production is found in the Mill Shoals field to the north and east.

Extent of the Hoodville pool is not yet known, although some dry holes in the area give an indication of what its possibilities may be. On the west side of the field a dry hole in the SW SW SW of Section 35-5s-6e limits the field. In the NE NE NE of Section 4-6s-6e a dry hole, drilled to a total depth of 2,564 ft., was not deep enough to get the pay. Four dry holes in Township 6s-6e were drilled deep enough to get the Benoist and Aux Vases pays but were failures. They form a boundary which will probably limit the field's growth to the south and east. These dry holes are almost in a straight line, being located in the N½ NE Section 14, SW NE SE of Section 15, SE SE NE Section 29 and the SW NE SE Section 31. In Section 23-6s-5e a dry hole was drilled to a total depth of 3,258 ft. Dry holes along the east side of Section 35-5s-6e seem to limit the field in that direction.

Possibilities of the field reaching the boundaries indicated by the dry holes already drilled are not great although so far there is nothing which indicates its limits to the south. The territory has repeatedly been seismographed by both major and independent companies, but there is little agreement on the picture indicated by the data obtained. First opinion was that a large structure existed in the area. Later work, dry holes and the discovery and outlining of the Dale pool in Township 6s-7e, indicated that a number of smaller structures might be present on a major feature. Hoodville's continued growth may prove the first opinion to be correct.

The possibilities of the Hoodville productive area being extended beyond the line of dry holes running northeast to southwest across the township (6s-6e) is remote. However, some interested in the area believe that another pool exists to the southward and the prices of royalty and leases in the southern part of the township are extremely high. There is little trading of leases although there is some activity in the royalty business.



Mid-Continent Map Co., Mattoon, Ill.

Map of a portion of Hamilton County showing both the Hoodville and Dale pools and dry holes drilled in the area

California Crude-Price Adjustments Reflect Changes

(Continued from Page 27)

mand, on behalf of the heavy-crude-oil producers, that the price for their product be restored to levels which are justified."

Standard's new price schedule, which increased the price of heavy crude oil 5 cents per barrel, failed to meet the demand of the association that price levels existing prior to 1940 be restored but heavy-crude-oil producers believe the outlook is growing more favorable.

Export Shipments

During 1940 California marketers exported 21,891,000 bbl. of crude and refined oil to Japan and Japanese controlled Kwantung in addition to a considerable amount of refined oil in case lots.

BULK-OIL SHIPMENTS
(Thousands of barrels)

1940:	Crude petroleum	Gasoline	Kerosene	Lubricants	Distillate fuel oil	Residual fuel oil
Jan.	1,404	223	56	68	595	69
Feb.	879	44	....	44	321	128
Mar.	979	109	19	62	551	95
April	735	125	....	55	303	190
May	1,034	....	....	15	377	455
June	1,149	112	....	27	597	240
July	1,301	23	....	....	634	270
Aug.	830	103	....	35	522	375
Sept	1,099	115	....	34	261	103
Oct.	1,204	98	....	134	241	115
Nov.	1,088	89	....	292	429	179
Dec.	879	55	....	....	183	145
Total	12,576	1,096	75	766	5,014	2,364
1941:						
Jan.	600	98	....	....	666	159

TANKER AND PACKAGE-OIL SHIPMENTS FROM PACIFIC COAST TERRITORY
(Bbl. of 42 gal.)

	1940	1939
Crude:		
Atlantic intercoastal	679,000	947,000
Pacific foreign	18,488,000	21,813,000
States outside Pac. Coast terr.	....	2,000
Total	19,167,000	22,762,000
Gasoline:		
Atlantic intercoastal	3,893,000	3,473,000
Gulf intercoastal	73,000	26,000
Atlantic foreign	559,000	3,182,000
Pacific foreign	5,783,000	6,043,000
Alaska and Hawaii	1,655,000	1,500,000
States outside Pac. Coast terr.	1,318,000	1,670,000
Total	13,281,000	15,894,000
Natural gasoline:		
Gulf intercoastal	....	166,000
Atlantic foreign	4,000	1,000
Pacific foreign	464,000	531,000
Alaska and Hawaii	5,000	4,000
States outside Pac. Coast terr.	14,000	13,000
Total	487,000	715,000
Fuel, diesel and gas oil:		
Atlantic intercoastal	1,286,000	2,922,000
Atlantic foreign	562,000	2,228,000
Pacific foreign	15,454,000	17,657,000
Alaska and Hawaii	5,404,000	4,081,000
States outside Pac. Coast terr.	481,000	464,000
Total	23,187,000	27,352,000
Kerosene:		
Atlantic intercoastal	94,000	391,000
Atlantic foreign	94,000	847,000
Pacific foreign	1,384,000	1,599,000
Alaska and Hawaii	157,000	153,000
States outside Pac. Coast terr.	26,000	29,000
Total	1,755,000	3,019,000
Lubricants:		
Atlantic intercoastal	37,000	41,000
Gulf intercoastal	1,000	....
Atlantic foreign	14,000	14,000
Pacific foreign	1,667,000	1,231,000
Alaska and Hawaii	62,000	59,000
States outside Pac. Coast terr.	225,000	168,000
Total	2,006,000	1,513,000
Other products:		
Atlantic intercoastal	687,000	504,000
Atlantic foreign	11,000	2,000
Pacific foreign	546,000	477,000
Alaska and Hawaii	29,000	22,000
States outside Pac. Coast terr.	190,000	196,000
Total	1,463,000	1,201,000
Total all products:		
Atlantic intercoastal	6,676,000	8,278,000
Gulf intercoastal	74,000	192,000
Atlantic foreign	1,244,000	6,274,000
Pacific foreign	43,786,000	49,351,000
Alaska and Hawaii	7,312,000	5,819,000
States outside Pac. Coast terr.	2,254,000	2,542,000
Total	61,346,000	72,456,000

Note: "Pacific foreign" includes shipments to Canal Zone. Compiled from monthly California Petroleum Statements, Bureau of Mines.

International

Bolivia . .

Movement Launched to Review Expropriations

THE Bolivian Senate has been asked to consider the Standard Oil Co. of Bolivia expropriation which has been a matter pending between interests of the government and the United States company since March 1937. A request for consideration of the dispute was injected into the Bolivian Senate by Mamerto Urriolagoitia and Luis Calvo, senators.

Concessions and physical property of Standard Oil Co. of Bolivia were expropriated by the government for the alleged reason that terms of the original contract had been violated. The government contended that Standard has exported oil across the border into Argentina where quantities were used for drilling a well in the neighboring country. Contention was made that the oil was exported without reporting to the government. Standard of Bolivia contends that the small amount sent into Argentina for use as fuel on a drilling well there was reported to government officials. Specifically, the confiscation was based on alleged failure of the company to declare the concessions productive in 1926 involving higher taxes.

Senator Urriolagoitia, quoted in dispatches from La Paz, said that because of the oil question, Bolivia had received no loan from the United States Export-Import Bank. He expressed the opinion that Bolivia would have difficulty in obtaining financial assistance from the United States unless an agreement could be reached on the oil question. Standard of Bolivia claims its investments in the country up to the time of expropriations totaled about $17,000,000.

Argentina . .

Production Increase Permits Import Curb

THE fact that Argentina took another large step toward self-sufficiency from an oil standpoint last year is revealed in a report on that country's imports of crude oil in 1940. The report shows that last year's crude imports for processing were reduced approximately 25 per cent from the previous year.

According to this report, government refineries handled 3,946,000 bbl. of imported crude oil last year, 15.4 per cent of the total foreign and domestic crude run to stills. In contrast 4,238,000 bbl. of foreign crude oil were refined in 1939, 20.4 per cent of all crude runs in that year.

Colombia . .

Colombian Oil Exports Gained 18 Per Cent in 1940

EXPORTS of crude oil from Colombia increased 18 per cent in 1940 over 1939, final data for the year reveal. Exports in 1940 totaled 22,314,000 bbl. against 19,013,000 bbl. in 1939. The 1939 figures do not include those from the port of Covenas opened with the inauguration of the pipeline service from the Barco concession on November 5 of that year.

The detailed report on Colombia's crude exports for the 2 years, as reported by the Bureau of Mines, follows:

	1939	1940
Canada	5,148,000	9,097,000
Netherlands West Indies	9,092,000	8,014,000
United States	1,166,000	344,000
Argentina	85,000	901,000
Czechoslovakia	53,000	.....
France	2,492,000	2,276,000
Italy	852,000	459,000
Norway	53,000	99,000
Portugal	.....	368,000
Canary Islands	.....	756,000
South Africa	72,000	.....
Total	19,013,000	22,314,000

The 80 per cent increase in exports to Canada offset largely the effect of the loss of European markets because of war. The effect of this loss, however, is not shown entirely for the cessation of shipments to France and Italy is not indicated. France took almost as much in 1940 before capitulating as in all of 1939.

THE TEXAS CO. and Socony-Vacuum Oil Co., equal owners of about 90 per cent of Colombian Petroleum Co. which operates the Barco concession in eastern Colombia, have issued notes to cover some obligations of the subsidiary. The new notes, totaling $15,000,000, issued to Metropolitan Life Insurance Co. and Equitable Life Assurance Society, bear annual interest of 1½ per cent and mature November 15, 1944. The new notes replace direct obligations of the Colombian Petroleum Co.

El Salvador . .

Permission Granted for Expansion of Storage

REVISION of a contract between the Government of El Salvador and the Standard Oil Co. of California which will result in the construction of additional oil-storage facilities at Puerto de Cutuco has been approved by the assembly at San Salvador.

Approval of the government is in line with its policy of encouraging gasoline consumption, taxation on which is resulting in a vastly improved highway system in the country.

Venezuela . .

Production Increase Is Continued Second Month

REBOUND from the November low-production level continued in Venezuela during January when crude output totaled 15,176,605 bbl., an increase of 11 per cent over December.

Daily average production of 489,658 bbl. in January exceeded the average of 439,231 bbl. in December by 50,337 bbl.

The low mark of Venezuela crude production in the decline which prevailed through most of 1940 was established in November when the yield was 13,129,960 bbl., a daily average of 437,665 bbl. The January production total of 15,176,605 bbl. was the highest reported from Venezuela since August 1940, when the output was 15,730,105 bbl. Monthly production for the past 7 months follows:

PRODUCTION BY MONTHS IN U. S. BARRELS

Month—	Total	Daily average
July	17,232,490	555,885
August	15,730,105	507,422
September	14,553,670	485,120
October	13,762,400	443,950
November	13,129,960	437,665
December	13,176,930	439,231
January	15,176,605	489,568

The most significant change in January production was return of Lagunillas to a position approaching that held by the field for many years extending down through the middle of 1940. Lagunillas produced 4,856,790 bbl. in January, compared to 3,052,330 bbl. in December; 2,845,100 in November and 3,286,000 bbl. in October. In July 1940 Lagunillas produced 5,656,855 bbl. Higher demand for heavy Lagunillas crude may be linked to the United States consumption of heavy fuels and the high imports by this country.

Increases were registered in January by Cabimas, Tia Juana, Oficina, Jusepin, Guario and Santa Rosa, Mene Grande Oil Co.'s new field northeast of El Roble, made its first appearance in the list of shipping fields. Santa Rosa produced about 65 bbl. daily in January from one well.

Reductions were suffered by Bachaquero, Cumarebo and Quiriquire along with less significant declines in some of the other less important fields. Cumarebo production dropped from 88,005 bbl. in December to 33,990 bbl. in January, a reduction of more than 60 per cent. Guario, one of the newer fields in the group including El Roble, San Joaquin and Santa Ana. The substantial increase of 1,800,000 bbl in January production from Lagunillas caused the shares of Lago Petroleum Corp. and Venezuelan Oil Concessions, Ltd., to advance accordingly.

January production data by companies and fields, converted from the original on the basis of 6.703 bbl. per metric ton, are shown in the following tables.

PRODUCTION BY COMPANIES

Companies—	Figures in barrels— January	December
Caribbean Petroleum Co.	935,605	898,825
Venezuelan Oil Concessions, Ltd.	3,071,475	2,741,745
Colon Development Co.	426,440	404,115
Lago Petroleum Corp.	4,462,320	2,806,015
Mene Grande Oil Co.	3,682,325	3,562,695
British Controlled Oilfields, Ltd.	19,325	20,450
Central Area Exploitation Co.	50,165	51,405
Standard Oil Co. of Venezuela	2,499,555	2,694,265
Compania de Petroleo Lago	22,585	23,520
Socony Vacuum Oil Co.	6,810	2,110
Texas Co. (Venezuela), Ltd.	.....	1,785
Total	15,176,605	13,176,930

PRODUCTION BY FIELDS

Fields—	January	December
Cabimas	1,259,700	1,183,195
Lagunillas	4,856,790	3,052,330
Tia Juana	2,950,785	2,712,155
Bachaquero	72,305	161,025
La Concepcion	57,445	59,870
La Paz	42,475	40,345
Mene Grande	935,605	898,825
El Cubo	426,440	404,115
Cumarebo	33,990	88,005
Las Palmas	2,535	1,655
El Mene de Mauroa	19,325	20,450
Hombre Pintado	50,165	51,405
Quiriquire	1,705,310	1,905,350
Pedernales	137,900	139,300
Temblador	323,025	334,930
Oficina	1,740,385	1,651,285
Jusepin	337,825	258,005
Santa Ana	715	415
San Joaquin	135,255	126,305
El Roble	77,365	80,060
El Tigre	1,680	2,520
Guario	6,810	2,110
Socororo	810	1,490
Santa Rosa	1,965	.....
Los Caritos	.....	1,785
Total	15,176,605	13,176,930

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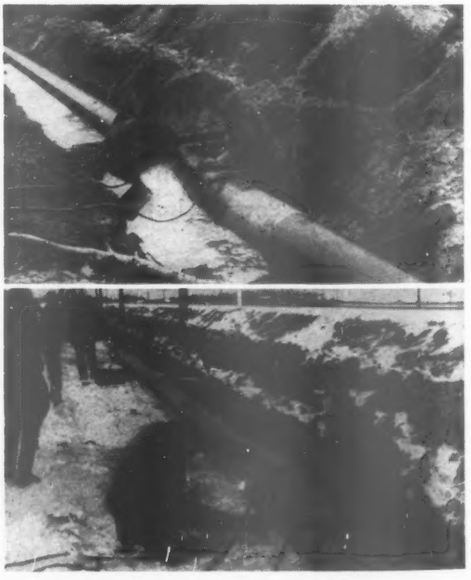

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B. of M. Shows Increase of 12.3% in Motor Fuel Demand

AN increase of 12.3 per cent in the domestic demand for motor fuel in January compared to a year ago exceeded all expectations, the Bureau of Mines reported in its monthly petroleum summary issued last week.

Despite the substantial increase in demand for motor fuel, unequaled in recent years, it was overshadowed from a standpoint of percentage gain by indicated consumption of lubricating oils. Domestic demand for motor oils of 2,367,000 bbl. in January was 15.2 per cent higher than a year ago. Domestic demand for all products, excepting distillate fuels, increased in January over a year ago.

The domestic-demand increase for most oils was modified to some extent by declines in exports, although this situation applied in a smaller degree to gasoline than to other products. Distillate fuel was the only product for which export demand in January 1941 increased over the shipments a year ago, and in this case the advance was only 3 per cent. Export demand for motor fuel also exceeded expectations in January, totaling 2,045,000 bbl., a slump of 10.1 per cent compared to a year ago, but 3 per cent higher than in December.

Part of the improvement in domestic demand was offset by substantial increases in imports of all liquid-petroleum products. Imports of fuel oils were 55.9 per cent higher in January than a year ago and crude receipts from foreign sources were up 43.2 per cent.

Exports of crude are down 59.9 per cent, kerosene shipments have slumped 76.5 per cent and foreign sales of lubricating oils are off 50 per cent. The reduction of 534,000 bbl. in exports of lubricating oils in January compared to a year ago more than offset the increase of 313,000 bbl. in indicated domestic demand.

Yield of gasoline continued its decline in favor of distillate fuel oil. Production of gasoline fell from 43.1 per cent of refinery runs in December to 42.8 per cent in January, while the distillate yield increased from 15.1 per cent to 15.4 per cent.

The comparatively mild weather this January was reflected in the distillate-fuel demand which was 7 per cent lower than a year ago. On the other hand, residual-fuel demand was 3 per cent higher.

The Bureau of Mines reported an increase of 6,000,000 bbl. in motor-fuel stocks in January, bringing the total up to 88,800,000 bbl. at the start of February. Total stocks were about 600,000 bbl. less than on hand a year ago and, excluding aviation-gasoline inventory of 6,595,000 bbl., of about 3,250,000 bbl. less.

UNITED STATES SUPPLY AND DEMAND

January 1941 and 1940. (All figures in thousands of barrels)

Crude Oil

January—	Total supply	Total demand	Excess Demand	Excess Pct.	Domestic production	Imports	Indicated domestic demand‡	Exports	Stocks refinable crude Jan. 31¶
1941	113,440	114,335	895	0.8	110,647	2,793	112,648	1,687	263,251
Daily average	3,659	3,687	....		3,569	91	3,633	53	.....
1940	115,090	114,151	*939	*0.8	113,140	1,950	109,949	4,202	239,794
Daily average	3,712	3,682	.....	...	3,650	63	3,547	136	.....
Increase, 1941	†1,650	184	.....	...	2,493	843	2,699	†2,515	23,457
	†1.4%	0.2%	.....	...	2.2%	43.2%	2.5%	†59.9%	9.8%

Refinery Products—Motor Fuel

January—	Total supply	Total demand	Excess Demand	Excess Pct.	Domestic production	Imports	Domestic demand	Exports	Stocks Jan. 31§
1941	52,542	47,389	*5,153	*10.9	52,542	.....	45,344	2,045	88,800
Daily average	1,695	1,529	.....	..	1,695	.... ..	1,463	66	..
1940	50,261	42,644	*7,617	*18.0	50,243	18	40,370	2,274	89,339
Daily average	1,621	1,375	.....	...	1,621	.....	1,302	73	..
Increase, 1941	2,281	4,745	.....	...	2,299	.....	4,974	†229	†539
	4.5%	11.1%	.....	..	4.6%	.....	12.3%	†10.1%	†0.6%

Kerosene

1941	6,661	7,861	1,200	15.3	6,661	.....	7,769	92	8,312
1940	5,375	8,033	2,658	33.1	5,375	.....	7,642	391	4,918
Increase, 1941	1,286	†172	.....	..	1,286	.....	127	†299	3,394
	23.9%	†2.1%	.....	...	23.9%	.....	1.7%	†76.5%	69.0%

Distillate Fuel and Residual Fuel Oil¶

1941	47,910	56,933	9,023	15.8	44,976	2,934	54,336	2,597	124,196
1940	46,512	57,623	11,111	19.3	44,630	1,882	54,935	2,688	115,743
Increase, 1941	1,398	†690	.....	...	346	1,052	†599	†91	8,453
	3.0%	†1.2%	.....	..	0.8%	55.9%	†1.1%	†3.4%	7.3%

Distillate Fuel Oils

1941	17,410	22,593	5,183	22.9	17,018	392	20,998	1,595	37,938
1940	16,548	24,011	7,463	31.1	16,548	.....	22,462	1,549	26,462
Increase, 1941	862	†1,418	.....	...	470	.....	†1,464	46	11,476
	5.2%	†5.9%	.....	...	2.8%	.....	†6.5%	3.0%	43.4%

Residual Fuel Oils

1941	30,500	34,340	3,840	11.2	27,958	2,542	33,338	1,002	86,258
1940	29,964	33,612	3,648	10.9	28,082	1,882	32,473	1,139	89,281
Increase, 1941	536	728	.....	..	†124	660	865	†137	†3,023
	1.8%	2.2%	.....	..	†0.4%	35.1%	2.7%	†12.0%	†3.4%

Lubricating Oils

1941	2,943	2,901	*42	*1.4	2,943	.....	2,367	534	8,809
1940	3,308	3,122	*186	6.0	3,308	.....	2,054	1,068	7,328
Increase, 1941	†365	†221	.....	...	†365	.....	313	†534	1,481
	†11.0%	†7.1%	.....	..	†11.0%	.....	15.2%	†50.0%	20.2%

Petroleum Wax (Thousands of pounds)

1941	45,708	50,953	5,245	10.3	45,080	628	37,724	13,229	120,027
1940	55,256	56,329	1,073	2.0	48,440	6,816	35,187	21,142	74,575
Increase, 1941	†9,548	†5,376	.....	.	†3,360	†6,188	2,537	†7,913	45,452
	†17.3%	†9.5%	.....	...	†6.9%	†90.8%	7.2%	†37.4%	60.9%

*Excess supply. †Decrease. ‡Crude only. §Includes finished and unfinished refinery gasoline and natural gasoline. ¶Distillate fuel and residual fuel oil equals distillate fuels plus residual. Note: Total supply equals domestic production plus imports. Total demand equals domestic demand plus exports. Data on demand for refined products based on refinery shipments. ‖Does not include 11,839,000 bbl. of heavy oils in California. Comparable figures for January 31, 1940, 13,385,000.

Crude Oil Run to Stills and Total All Oils

January—	Total imports§	Total exports§	Total crude to stills	Per cent yield gasoline‡	Natural gasoline production	Total supply all oils*	Total demand all oils*	Stocks all oils Jan. 31*
1941	6,085	7,218	110,683	42.8	4,884	121,929	126,752	559,131
Daily average	196	233	3,570	...	158	3,933	4,089	.....
1940	4,712	10,928	106,530	42.9	4,271	122,395	126,719	520,446
Daily average	138	353	3,436	...	138	3,948	4,088	.....
Increase, 1941	1,373	†3,710	4,153	...	613	466	33	38,685
	29.1%	†33.9%	3.9%	...	14.4%	0.4%	.....	7.4%

*Total all oils includes crude and refined products, natural gasoline, and benzol. Stocks January 31, 1941, represented 137 days' supply, which compares to 127 days on the same date in 1940. †Decrease. ‡Does not include natural gasoline blended at refineries. §Includes crude oil and refinery products. In case of imports includes receipts in bond for domestic use. All data based on Bureau of Mines reports.

Gasoline Holds Key to Industry's Course

(Continued from Page 23)

gasoline problem largely rests with producers and refiners. The operating head of one large company has detailed reports covering 1940's operations showing how excessive allowables in certain states and the uncontrolled production in other areas brought excessive crude-oil supplies on the market several times during the year. The same reports reveal that part of this excess production went to the refineries and was made into gasoline and became surplus material overhanging that market during a large part of 1940.

This authority deplores the practice of many companies in nominating more crude oil from month to month than their refineries need. He blames certain proration bodies for aggravating this situation through the policy of basing allowables on a percentage of the nominations, thus forcing some companies to nominate excess quantities in order to obtain what they have to have. He also condemns the race among the states to get more than their share of the market as basically unsound, contributing directly to the oversupplies which have nullified every effort to bring stable and adequately profitable markets to the industry.

In regard to 1941, all observers agree that the results of 1938, 1939 and 1940 point the way. The statistical position of gasoline is better than it was a year ago and crude-oil production and demand is in better balance over a large part of the industry. The consolidation of these gains and their extension through the second quarter of this year are necessary before the industry will have a sound basis to assure the needed recovery in gasoline markets.

New values through U O P

There are strange new names in refinery language today and they represent new processes, unheard of till just a little while ago Some of these take up where Dubbscracking leaves off, and go on from there

They differ in operation and in results but they all aim at just one goal—to get more value out of every barrel of crude oil And they do They make products never before derived from petroleum—butadiene, source of synthetic rubber; toluene, vital ingredient of TNT and fighting aviation fuel of superlative power

Besides pyrolytic cracking, Universal's pioneering has resulted in development of:

Catalytic cracking
Catalytic reforming
Polymerization
Alkylation
Isomerization
Cyclization
Aromatization
Hydrogenation
Dehydrogenation

All are at the service of every American refiner, through Universal

They are at the service of the nation

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Refinery Expansion

Port Arthur Shipments For February Increase

PORT ARTHUR, Tex.—The Texas Co. and Gulf Oil Corp. shipped a combined total of 8,780,339 bbl. of crude and refined products from their refineries and terminals at Port Arthur in February, an increase of 354,951 bbl. over the same month in 1940.

The Texas Co. tanker shipments from Port Arthur totaled 4,923,357 bbl. of crude oil and refined products, an increase of about 350,000 bbl. over the 4,568,406-bbl. total for the month a year ago. The February 1939 total was 5,515,508 bbl., indicating the extent to which exports have depressed tanker shipments.

Gulf Oil Corp. shipments last month totaled 3,807,499 bbl., all refined products and nearly all in coastwise traffic, compared with 3,856,982 bbl. in February, last year, and 3,711,514 bbl. in the same month in 1939.

Allegany Refiners Will Expand New York Plant

BOLIVAR, N. Y.—New construction to lift the capacity from 1,000 to 1,500 bbl. daily at Allegany Refiners, Inc.'s plant at Bolivar, N. Y., has been authorized by stock and scripholders. Scrip will be converted to common stock and directors were authorized to proceed with a refinancing plan.

Hans Walchli, general manager, indicated at a meeting of the security holders last week here, that contemplated expansion will require engagement of 25 additional employes, and will result in production of a more diversified range of oils.

Bradford Refinery May Soon Resume Operations

BRADFORD, Pa.—Resumption of refinery operations here by Bradford Oil Refining Co. is the goal of a new policy announced last week by which the company will enter the field of local distribution of products.

John von Carlowitz, vice president and treasurer of the company, announced the program designed to return the Bradford plant to active operation. The plant was shut down late in 1940.

"During full operating months a year ago," declared Mr. Von Carlowitz, "we employed over 140 persons with a monthly payroll of $20,000. At present 18 people are employed, including those necessary for maintenance of the refinery properties."

Memphis, Tenn., Refinery Costing $500,000 Planned

MEMPHIS, Tenn., Mar. 17.—A $500,000 refinery is planned in this city to process crude from the Tinsley field of Yazoo County, Mississippi. The plant will be built by the Delta Refining Co., and will include cracking facilities, according to the report. It is planned to move crude oil by river barge from Mississippi and possibly Mexico.

Atlas Refinery Bid Will Be Reviewed by Court

SHREVEPORT, La.—Several oil producers are scheduled to bid for the refining and pipe-line properties of the Atlas Pipe Line Co. here this week, Grady H. Vaughn and Leon Russ of Dallas, Tex., associated with Walter Goldston, Frank and George Frankel of Houston and L. A. Greeling of Tyler are reported interested in the company.

The Atlas Pipe Line Co. holdings, now in receivership, include a refinery at Shreveport, a crude-oil line extending from El Dorado, Ark., through Shreveport to the East Texas field, and an office building in Shreveport. The oil producers interested in acquiring the company have properties in South Arkansas.

According to reports, the bid, which has been made, meets approval of the bondholders, and needs only approval of the United States District Court in Shreveport for consummation. Formal transfer of the properties may take place promptly if consent is given.

Natural Gas

Complete Study of Gas In California Planned

Two agencies of California last week announced a thorough investigation into the supply and utilization of natural gas in the state so as to preserve its greatest benefits for the consuming public.

Pending before the Railroad Commission are the applications of Southern California Gas Co., Southern Counties Gas Co. and Santa Maria Gas Co., seeking authority to discontinue service to certain industrial customers at such times as natural gas may be conserved for the maximum benefits of the public.

In order to make a sound determination of the pending applications, the commission requires a thorough knowledge of the natural-gas situation throughout California. Jurisdiction over these matters lies partly with the commission and partly with the Department of Natural Resources.

The public interest demands that a long-range plan promptly be developed for the orderly distribution and utilization of the resources of natural gas in California available to the public-utility gas companies operating in this state. Complete information of the present reserves, transmission and distribution facilities is essential before reaching conclusions as to any steps which may properly be taken.

The objective of the investigation is the obtaining of comprehensive knowledge on present and future gas reserves and the formulation of a program for their better control and more efficient utilization. The scope of the investigation will include the following subjects:

1. Occurrence and geographical location of present and possible future gas reserves; availability of reserves; relationships between reserves of dry gas and casinghead gas and their most efficient use.

2. Survey of possibility of utilizing underground storage as equalizing reservoirs between summer and winter gas demands, thus better protecting the supply for the basic domestic and commercial-gas user and having in mind the incidental effect on the recovery of oil.

3. Adequacy of means of transmission and distribution of natural gas from the fields to the major markets.

4. Analysis of customer usage by classes of service and estimates of the future requirements of various classes of service.

5. Formulation of marketing policies and plans of procedure from source to ultimate consumer to insure the highest degree of utilization of California's natural-gas resources, primarily in those classes of service where it has the highest utility of use.

6. The effect of the factors referred to above, and other factors, upon the cost of production, transmission and distribution of natural gas and upon rates ultimately fixed by the Railroad Commission.

Kansas Gas Company May Purchase Nebraska Unit

WASHINGTON, D. C.—The Federal Power Commission has ordered that a public hearing be held on April 2 concerning the application filed jointly on March 10 by Kansas Pipe Line & Gas Co. and Nebraska Natural Gas Co. for a certificate of convenience and necessity authorizing the Kansas company to acquire and operate all the properties of the Nebraska company.

The application states that the purchase price is $1,700,000, less the amount of cash shown on the books of the vendor and retained at the time of delivery of properties after deductions for federal and state income taxes. Nebraska Natural of Topeka, Kans., owns and operates a pipe-line system of 255 miles, and sells gas at wholesale and at retail in Nebraska. The Kansas company, with offices at Phillipsburg, owns and operates a system of approximately 650 miles in Kansas and Nebraska, selling gas at town borders and at retail.

Recycling News

Experimental Permit for Paradis Field Asked

BATON ROUGE, La.—Application for permit to operate an experimental distillate-recovery plant in the Paradis field of St. Charles Parish has been filed by the Texas Co. The proposed plant would process 5,000,000 cu. ft. of gas daily and recover an estimated average of 125 bbl. of condensate.

COMMITTEE ARRANGES FOR GAS SHORT COURSE APRIL 15-17

General plans for the Southwestern Gas Measurement Short Course were worked out by this committee, left to right, standing: W. H. Carson, E. M. Myers, E. C. McAninch, Max E. Watson, J. H. Page, J. H. Satterwhite, William F. Lowe, W. R. McLaughlin, R. M. Scofield, E. L. Stark. Left to right, sitting around the table: Gilbert Estill, Earl Kightlinger, C. A. Gibson, Ray L. Rountree, G. W. McCullough, D. A. Sillers, and Kate A. Niblack. Other members of the general committee not present for the picture are: Dr. F. V. L. Patten, E. H. Poe, R. J. Sullivan, C. E. Terrell, and W. H. Woods

Higher Aviation-Fuel Stocks Important in Inventory Rise

By EDWARD T. KNIGHT
Economist, Atlantic Refining Co.

FAILURE to take into consideration the creation of a new segment of stocks, namely, those of aviation gasoline which have little or no influence upon the statistical position of motor gasoline proper, nullifies certain unsound conclusions that have been reached by comparing the current level of total gasoline stocks with that of a corresponding period a year ago.

Significant comparisons of the level of stocks at any time with those of corresponding previous periods, as of the year before, require thorough-going consideration of two factors, namely:

1. *Days' supply.*—In terms of days' supply stocks may be effectively lower even though absolute volumes may be greater than in some previous period.
2. The qualitative character of the stocks must be examined. This is particularly important in view of the changed composition of gasoline stocks as commonly reported because of the current inclusion of large quantities of aviation gasoline heretofore not playing an important role in the inventory total.

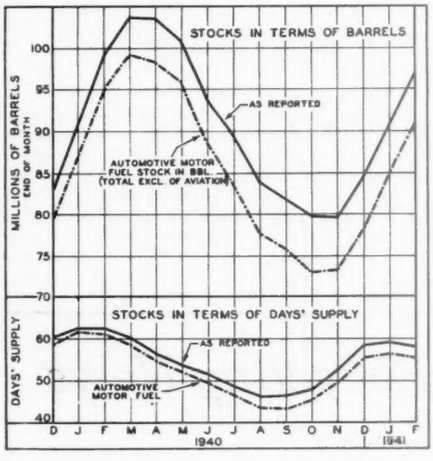


Chart showing importance of aviation-motor-fuel stocks in total gasoline inventories

Statistical analysis of the situation indicates that current stock levels of automotive motor fuel are equal to only 55 days' supply (forecasted demands considered) as compared to 61 days' supply on hand February 28, 1940 (actual indicated demands considered).

The second factor mentioned above, that is, the differential growth of stocks of aviation gasoline, is particularly important at this time when the oil industry is contributing to the defense program by accumulating substantial quantities of aviation gasoline. Recent reports (March 1, 1941) indicate that stocks of aviation gasoline totaled nearly 6,348,000 bbl., or approximately 2,211,000 bbl. more than comparable stocks a year previous.

Thus, if adjustment to the reported total stocks of gasoline is made for this newly important product, it is indicated that stocks of automotive motor fuel on March 1, 1941, were 90,569,000 bbl., or 4,589,000 bbl. less than the stocks of comparable material March 1, 1940.

Enough has been said to indicate the need for considering many phases of the situation before an accurate appraisal of the industry's operating policy is possible. The industry could not have conducted its operations very differently than it has. Many changes in operating policies may have required the accumulation of stocks somewhat more rapidly than is considered proper to the casual observer. For example, changes in marketing and transportation practices have caused the accumulation of nearly 1,755,000 bbl. of additional stocks at bulk terminals, in pipe lines, and "water borne" in transit, between January 1 and December 31, 1940.

Comparable monthly data for 1940 and 1941 are presented graphically in the accompanying chart.

DEATHS

ANDREW J. HARDEN, Pontotoc County, Oklahoma, homesteader who refused fabulous offers for a lease on 10 acres surrounding his log cabin in the heart of the Fitts field, died at his home near Ada, Okla., March 13. He was affectionately known as "Uncle Andy." His steadfast refusal to lease the 10 acres surrounding his cabin, although his other 275 acres out of the farm was developed, has become almost legendary in the oil industry.

WILLIAM W. TARBELL, 80, of Easton, Conn., former Pure Oil Co. official and brother of Ida Tarbell, author, died in the Bridgeport, Conn., hospital of pneumonia March 13. Mr. Tarbell was born in Pennsylvania July 1, 1860, the son of Franklin Sumner Tarbell, a builder of wooden oil-storage tanks. After reading law in North Dakota, Mr. Tarbell returned to Titusville, Pa., and engaged in pipe-line transportation, one of the first steps in building the Pure Oil Co. He was later treasurer and general manager of the Pure Oil Co. He was also president of the United States Pipe Line Co., and after leaving Pure was associated with Gulf Oil Co. for a year studying South American oil conditions.

J. I. STALEY, 51, Wichita Falls, Tex., independent oil operator who first became interested in the business during the Burkburnett boom, died in his sleep March 12. Death was believed to have resulted from heart failure. Mr. Staley was active in development of several North Texas fields and the firm of Staley, Wynne & Langford drilled about 60 wells in the East Texas field. After liquidation of the firm's holdings in East Texas Mr. Staley and his three sons formed the Staley Oil Co. and concentrated recent operations in Wichita, Wilbarger, Archer, Young and Montague counties. At the time of his death Mr. Staley's company had 50 to 60 wells in the K.M.A. field where Staley Oil Co. was one of the large operators. The widow, mother, three sons and three sisters survive.

CHARLES R. SWANK, 60, former superintendent of the Magnolia Pipe Line Co., died in a Shreveport, La., hospital March 12 from injuries received when his car crashed into a train at a crossing within the city limits.

PAUL BERNE CLOTFELDER, 47, an employe of the Empire Pipe Line Co. stationed in East Texas for the past 2 years, died at Gladewater, Tex., March 11 of a heart attack. The widow and a daughter of Little Rock, Ark., survive.

MARRY M. COBBETT, 76, secretary and treasurer of the Fisher Oil Co., of Pittsburgh, Pa., for the last 42 years, died March 8.

FRANK FRANTZ, last territorial governor of Oklahoma, and pioneer Wyoming oil producer, died March 9 at a hospital in Muskogee, Okla. Mr. Frantz resigned from the Cosden Oil Co. in 1919, and with several others formed the Frantz Oil Corp. The company acquired from the Cosden Co. its leases and holdings in Wyoming and Montana.

STEVEN J. ROTONDI, Dallas, Tex., who, with his partner, F. R. Jackson, drilled the Woodbine sand discovery well in the Hawkins field, Wood County, Texas, last December, died March 12. Burial was in New York City, where Mr. Rotondi was a lawyer for several years before moving to Texas.

LOY WILSON, 44, co-owner with O. E. Dempsey of the Dempsey-Wilson Construction Co., pipe-line contracting firm, died last week at a Topeka, Kans., hospital. He had been ill a week. Prior to the formation of the Dempsey-Wilson firm, Mr. Wilson was superintendent for O. C. Whitaker Co. His widow, a son and a daughter survive.

DAVID HANNAH, Houston, Tex., oil and real estate man, died March 9, at the age of 77. Mr. Hannah was a director of the Houston Oil Co. of Texas. He is survived by his widow, a daughter and two sons.

CARL J. TURNER, 61, eastern district representative for Spang & Co., of Butler, Pa., died suddenly March 11 at his home in Butler. Born at Parkers Landing, Pa., he has been employed by that concern for 28 years. He leaves his widow.

LEON LAMB, 61, engineer for the Mallory Oil Co., in the Bradford, Pa., field, died at the Bradford Hospital March 13. Born at Jefferson, Pa., October 6, 1879, he had been a resident of Bradford since 1901. Surviving are his widow and two daughters.

EDWARD W. HAMMOND, 56, well-known independent oil operator, died at his home in Houston, Tex., March 13, following a prolonged illness. Mr. Hammond had been an operator in South America, Mexico, East Texas, and Oklahoma. He was a native of Pulaski, Tenn., and had resided in Houston 25 years. He entered the oil business in Spindletop days and for several years was general manager of Gulf Oil Corp. operations in Mexico and South American countries. In recent years he was associated with his brother, J. G. Hammond, Fort Worth, Tex., contractor and producer, in operations in East Texas and other parts of the state. His widow, two daughters and three sons survive.

Cole Hearing Postponed

WASHINGTON, D. C., Mar. 18.—Final hearings before the Cole subcommittee will not start until Thursday, March 27, it was announced here today. The hearings were originally scheduled to start March 25.

THE MARKETS*

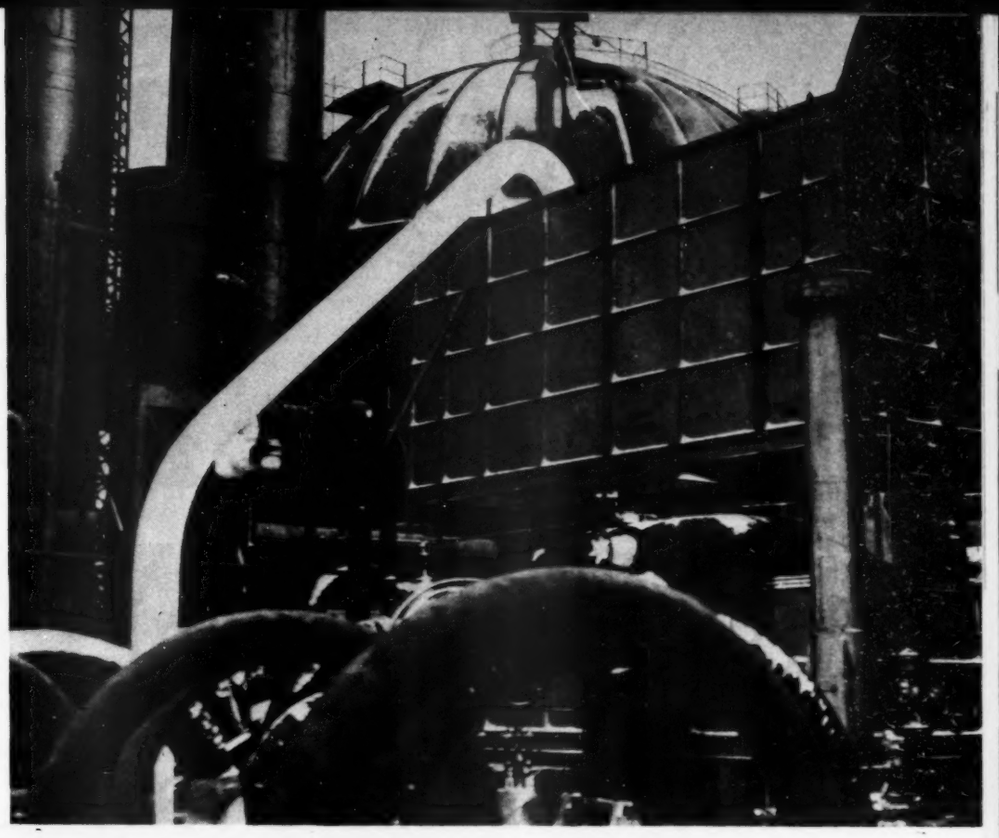
CRUDE OIL: Adjustment of California prices lifting low-gravity oils in the San Joaquin Valley 5 cents and lowering the highest-gravity crudes a maximum of 10 cents per barrel again focuses attention on the improvement in relative value of residual fuels. Other crude-oil markets are strong and unchanged this week.

REFINERY: Suppliers of gasoline to resellers in the Mid-Continent district have lifted quotations ⅛ cent. Another advance of ⅛ cent has been tacked on the high side of Gulf Coast postings while sale of four cargoes of No. 2 fuel oil there last week arrested declining prices.

TANK-WAGON AND POSTED-DEALER: The general trend prevalent over the past few weeks of higher gasoline prices and lower distillate-fuel quotations continues. New York and New England gasoline prices have been advanced by 0.3 to 1.5 cents per gallon.

FINANCIAL: More interest in oil securities is apparent with a general advance in the market. Average of 30 representative stocks for the week ended March 15: High, 22.74; low, 22.05; close, 22.45. Week ended March 8: High, 22.38; low, 21.73; close, 22.14.

*Detailed information in Market Section.



Newest innovation in the transmission and marketing of natural gas is the practice of liquefying the gas and storing it in heavily insulated spheres. When needed, the liquid gas is withdrawn and returned to its original gaseous form. Here are shown expansion heads, frosted ethylene return line from insulated gas condensors in box and two vertical ethylene storage tanks (in left background) in the first commercial plant of this type recently placed in operation at Cleveland, Ohio. A description of the plant begins on the following page

ENGINEERING & OPERATION

In This Section

MARCH 20, 1941

FIRST COMMERCIAL LIQUEFACTION PLANT IN FULL-SCALE OPERATION
By P. A. Condit and W. T. Burgess ..... Page 46

At Cleveland, Ohio, a plant for liquefying natural gas and storing it in heavily insulated storage spheres is in commercial operation. The gas-to-liquid transformation entails two distinct phases: gas processing and refrigeration. The former consists of raw-gas charging, recycling of unstabilized gas from the process, and recycling of unstable gas drawn from tops of the storage spheres.

INJECTION OF GAS IN LIME IN SOUTHEASTERN KANSAS
By Paul Reed ..... Page 48

In the South Yates Center pool of Woodson County, Kansas, injection of gas in a 1,500-ft. lime was started in 1935 with the result that decline in production has been partially checked.

THE INSPECTION OF TUBULAR GOODS AND SUCKER RODS
By H. M. Henderson ..... Page 50

Material costs constitute one of the main items of production expense, so that new methods which lead to reducing these costs automatically effect a large savings. General construction, methods of operation and results obtained through use of recently developed equipment for the inspection of tubing, drill pipe and sucker rods that have been in service for some time are described.

REPAIR OF SURFACE CASING ON ROTARY DRILLING WELLS
By Harry F. Simons ..... Page 54

During the drilling of a well the surface pipe generally will not cause any difficulty if properly installed and if care is taken to prevent unnecessary abuse in drilling remainder of the hole. In the event of a break, though, various methods described may be used for repairing the break.

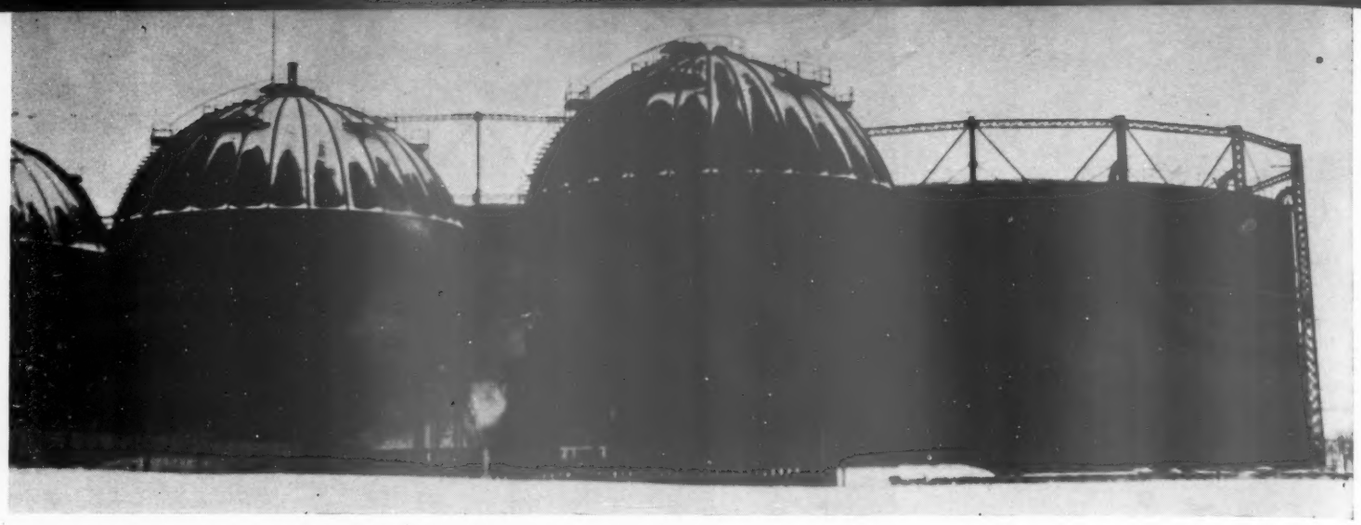
REFRIGERATED MUD PROPOSED FOR OVERCOMING HEAVING SHALE
By C. P. Bowie and R. V. Higgins ..... Page 60

The effort to overcome heaving shale in rotary drilling of wells has led research men along many paths. Here considerations involved in use of a refrigerant to hold shales in place are presented.

ELEVATED SLUICE BOX COOLS DRILLING MUD ..... Page 56

OPERATING IDEAS ..... Page 59

PROGRESS IN METALS—By W. L. Nelson ..... Page 66



Insulated spheres in which liquefied gas is stored and a 1,000,000-cu. ft. gas holder at the Cleveland plant

First Commercial Liquefaction Plant in Full-Scale Operation

By P. A. CONDIT* and W. T. BURGESS
Cooper-Bessemer Corp.

THE liquefaction of gas for its storage, and as a solution to the problem of peak-load demands upon gas-distribution systems, has held the attention of engineers for years. In the past the only satisfactory solution to this requirement of large reserves for unusual demands has been storage of the gas in its natural state in tanks or holders of enormous size. In many instances, even this procedure has not been adequate to meet mounting consumer demands which have accompanied the ever-increasing use of gas, both industrially and domestically.

To H. C. Cooper and the engineers of Hope Natural Gas Co. and Gas Machinery Corp. must go the credit for the development of an ingenious method of gas liquefaction and storage to overcome the difficulties hitherto experienced by fuel-gas suppliers everywhere. To East Ohio Gas Co. belongs the honor of pioneering the method on a commercial scale, for at that company's Cleveland, Ohio, headquarters there now stands the first plant of its kind, as concrete evidence of those three organizations' determination to perfect the process.

The general scheme of the plant and its function are known already to most natural-gas engineers, having been sketchily described in several journals. Its purpose is easily understood and its benefits multiple from both the utility's and the consumers' standpoints. In short, 150,000,000 cu. ft. of natural gas will be stored as a liquid at Cleveland, in three Hortonspheres having diameters of 57 ft. Fifty holder tanks of 3,000,000 cu. ft. capacities would be required to store a like amount of the fuel by the usual holder-storage method, and each of those tanks would measure 102 ft. in height and 150 ft. in diameter. It is probably quite safe to say that at no other place in the world is such a quantity of natural gas being stored aboveground. To achieve this unique result, natural gas is liquefied by compression and refrigeration, and then stored in heavily insulated containers (the storage spheres). When needed, the liquid gas is withdrawn and heated, whereupon it assumes its original gaseous form and is ready for the company's mains.

*Control and process engineer.

Naturally, the processes involved are not so simple as the manner in which they have just been described. By referring to the flow diagram of the Cleveland liquefaction plant (Fig. 1) it will be noted that the gas-to-liquid transformation entails two distinct phases; namely, gas processing, and refrigeration.

Generally speaking, the gas-processing phase is in itself three distinct operations which, in their order of application, are: raw gas charging, recycling of unstabilized gas from the process, and recycling the unstable gas drawn from tops of the storage spheres. As is the case in all continuous processes, consistently stable operation of equipment is necessary in order that a resultant stable process condition be maintained. To meet these requirements for absolute stability, several rather unique compressor applications are made in order to obtain successful operation. The compressor units used in the process phase of the plant's operation are all Cooper-Bessemer angle

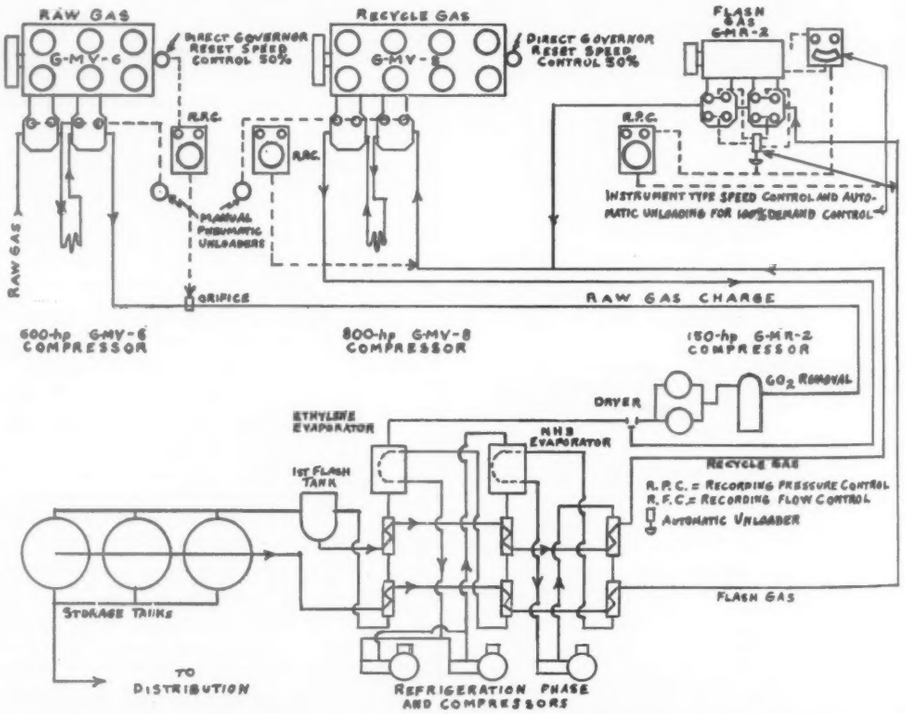
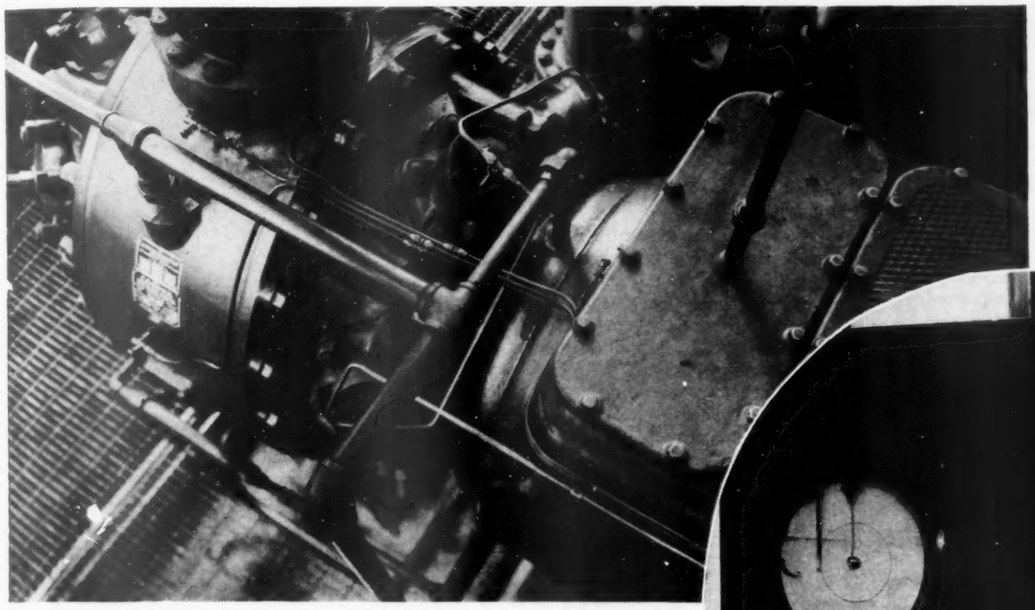


Fig. 1—Flow diagram of the gas-liquefaction plant. The gas-to-liquid transformation entails two distinct phases, gas processing and refrigeration

and V-angle direct-gas-engine-driven units. Three of these compressors are used.

Raw-Gas Compression

The raw-gas compressor is a six-cylinder V-angle unit rated 655 hp. at 326 r.p.m., arranged for two-stage compression with one 16½ by 14-in. first-stage compressor cylinder and one 9½ by 14-in. second-stage cylinder. First-stage suction pressure is approximately 45 lb. abs., and discharge 168 lb. abs. Second-stage suction is 165 lb. abs. and discharge 615 lb. abs. Compressor cylinders are double-acting and the capacity of the unit is 4,000,000 cu. ft. daily. This compressor unit is equipped with automatic speed control which consists of a flow controller resetting the engine speed control mechanism which in turn changes the engine speed. The compressor cylinders may be operated as single-acting through the use of manual-pneumatic suction-valve lifters.



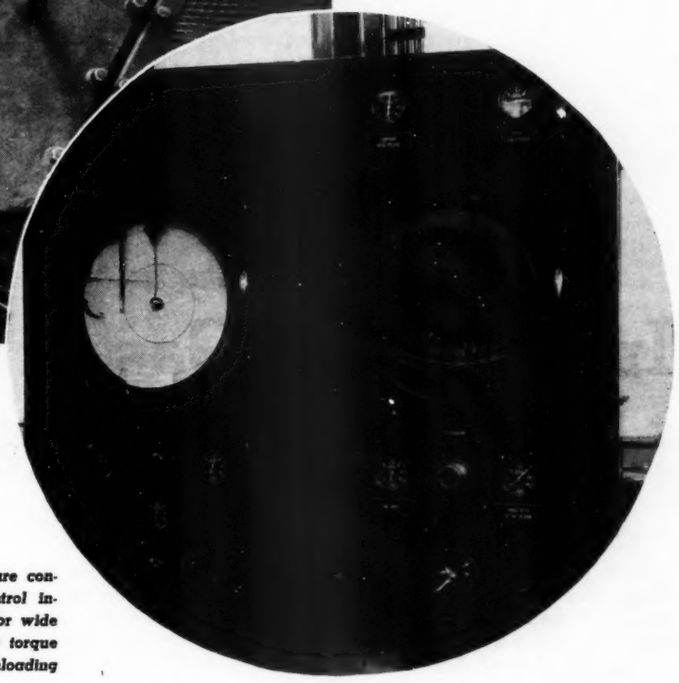


Fig. 2 (above) — View of compressor cylinder showing manual-pneumatic suction-valve lifters

Fig. 3 (right)—Suction-pressure controller and engine-speed-control instruments used to provide for wide speed range and fluctuating torque resulting from automatic unloading

Raw gas enters the plant at a pressure of approximately 45 lb. abs., is compressed to approximately 615 lb. abs., and then charged to the process. The complete stability of the plant is contingent upon a constant rate of charge, and for this reason an orifice-type flow controller is employed to reset the speed-control mechanism of this 655-hp. compressor unit. In order to insure unusual flexibility of the compressor in starting up and shutting down of the process, provision is made to completely unload the crank end of the double-acting compressor cylinders by lifting the suction valves. In order to facilitate this operation, manual-pneumatic suction-valve lifters are employed as shown in Fig. 2. Through this arrangement it is only necessary to turn a three-way valve located on the pressure-control panel to perform the unloading operation. Speed-control mechanism is so designed that stable operation is obtained throughout the compressor unit's range of from 150 r.p.m. to maximum speed.

Recycle-Gas Compressor

All moisture and carbon dioxide are removed from the raw gas when it is charged to the process. The gas then passes through the first refrigerating phase, where it is cooled to approximately —126° F., while being held at 615 lb. abs. pressure. The gas then enters a liquid-gas separator where the nitrogen is removed. Passing from this separator, it is further cooled by refrigeration to approximately —139° F. At this point most of the charging stock is in a liquid state and passes to another liquid-gas separator where the pressure is reduced to approximately 60 lb. abs. and its temperature further reduced to —218° F. It is from this separator that the unstable recycle gas is taken, as will be explained later. The liquid gas is reduced to approximately 25 lb. abs. pressure, held at —248° F., and then transferred from the separator to the storage spheres. Gas accumulating at the tops of the spheres is removed by the flash-gas compressor as will also be explained later.

The recycle-gas compressor is an eight-cylinder V-angle unit rated 800 hp. at 300 r.p.m. This unit is also equipped with double-acting compressor cylinders arranged for two-stage operation. One 18 by 14-in. first-stage compressor cylinder is employed and one 10½ by 14-in. second-stage cylinder. First-stage suction is 54 lb. abs. and discharge 183 lb. abs., while second-stage suction is 180 lb. abs., and its discharge 615 lb. abs. This unit is equipped with automatic speed control consisting of a suction-pressure controller directly resetting speed-control mechanism which operates to change the engine speed. The compressor cylinders may be operated single-acting with the use of manual pneumatically operated suction-valve lifters. (Note that here a suction-pressure controller resets the speed-control mechanism of the compressor unit, whereas, in the raw-gas compression, a flow controller is employed to reset speed control.)

This 800-hp. compressor unit is automatically controlled to maintain a constant suction pressure of approximately 69 lb. abs. in the liquid-gas separator. It is imperative that this pressure be maintained at all times in this vessel, in order that the recycle-gas rate will not be erratic and result in a fluctuating recycle-gas flow. The gas entering this compression phase, after having passed through refrigeration exchangers, is recompressed to approximately 615 lb. abs. and charged again with the incoming raw gas into the original refrigerating step.

Flash-Gas Compression

The flash-gas compressor is a two-cylinder Cooper-Bessemer angle-type unit, rated 150 hp. at 300 r.p.m. and equipped with two 14½ by 14-in. double-acting compressor cylinders, arranged for single-stage compression in which suction pressure is 16 lb. abs. and discharge is 54 lb. abs. This unit is equipped with automatic speed control in conjunction with five-step automatic unloading devices and so arranged that throughout the first half of the instrument range the speed may be reduced from maximum to minimum. After minimum speed is reached, the unit is unloaded automatically by the operation of pneumatic suction-valve lifters on each end of each cylinder.

As mentioned before this compressor unit draws accumulating gases from above the liquid in the storage spheres. The unit has the widest range of demand to handle of any compressors in the plant, and must maintain a constant pressure of approximately 25 lb. abs. on the storage spheres at all times. Inasmuch as the demand is extremely wide, ranging from approximately zero during normal operation to 100 per cent of the capacity of the compressor unit while starting up the process, instrument-type speed control, in conjunction with automatic compressor-cylinder unloading, is used.

This instrument-type speed control which eliminates conventional governors is very necessary in order to provide for the wide speed range and the fluctuating torque resulting from automatic unloading. In order to maintain a constant suction pressure, a pressure controller is used to reset the speed control over a 50 per cent range and to operate the five-step automatic unloading mechanism after minimum speed has been attained and still further compressor capacity re-

Fig. 4—General view of the angle and V-angle process phase compressors with 150-hp. flash-gas compressor in foreground, showing automatic unloading devices and speed control

duction is required. Fig. 3 illustrates a suction-pressure controller and the automatic engine-speed control. Fig. 4 shows automatic unloading equipment. This type of unloading and speed control is widely used by Cooper-Bessemer in various compressor applications and has proved highly satisfactory in that optimum stability is obtained even under severe operating conditions.

It might be well to digress slightly from the process phase of the plant's operation to explain here that the refrigerating phase uses ammonia for the initial step of refrigeration, which requires 500 compressor horsepower, and ethylene for the second step which requires 1,200 compressor horsepower.

Throughout the plant it is instantly apparent that the selection of compressor equipment was considered of paramount importance. Steady operation of the compressors is imperative, and they are subjected to wide ranges of operation and varying torque conditions.

Compressor and automatic-control engineers of the Cooper-Bessemer Corp. collaborated with the designers of the plant in the selection of compressor equipment and control devices, and also in the solution of capacity, speed-control, and flow-control problems. It is significant that the two-cycle compressor units used throughout the plant's process phase are operating with excellent stability. The achievement of this stability, upon which the successful operation of the plant hinges, may be attributed to the inherent smoothness of the compressor units and the efficient control mechanisms which govern their operation.

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Injection of Gas in Lime In Southeastern Kansas

By PAUL REED

SINCE the injection of gas into oil-producing lime formations is unusual, each example of this type of operation is watched with interest by field men in the area where it is located. For this reason, a brief account is given of what has been done where this method has been employed on a small property in southeastern Kansas.

In the South Yates Center pool of Woodson County, Kansas, an independent producing organization began the injection of gas shortly after its property was developed in 1934 and 1935. Gas pressure has been applied continuously ever since then. In completing the wells, casing was set on top of the Mississippi lime at a depth of approximately 1,500 ft.

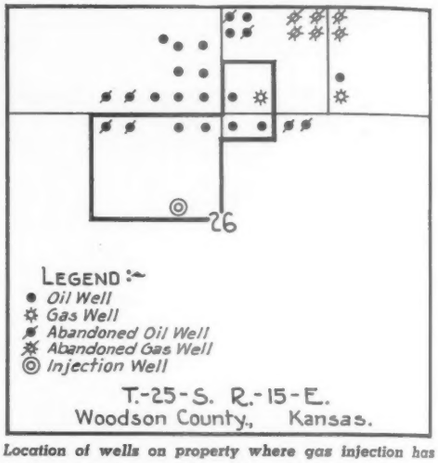
The boundaries of the property are indicated by the heavy lines on the accompanying map. The well now used as an injection well was originally completed as a producer, which proved to be disappointing. This well is located 1,000 ft. from the line of producing wells to the north; it is at the same sea-level elevation as one of the producing wells and is 5 ft. lower than the other producing wells. At the time when the operators were considering abandoning the present injection well, it was decided that, instead of abandoning the well, an experiment would be carried on to find out what could be accomplished by using this as a key well for the injection of gas which was available.

Most of the gas used is furnished by a gas well in the northeast part of the property; this well is 14 ft. higher than the lowest producing well. In addition to what comes from this gas well, some additional gas is furnished from the casing heads of pumping wells. In the early stages of gas injection about 70,000 cu. ft. per day were produced by the gas well; 2,000 to 3,000 cu. ft. per day were popped in the air and the balance was injected. As operations have progressed, gas production from the well has declined and casing-head gas has been utilized to meet requirements.

Gas is injected by a small compressor driven by a 25-hp. gas engine of a type commonly used for pumping powers. This equipment is operated at capacity all the time and injects gas at a pressure of 280 lb. This pressure has been maintained for the past 2 years. Before that the pressure maintained was between 340 and 350 lb.

As a result of gas injection, the decline of production has been checked sufficiently to justify the application of gas injection on the property. The oil has a gravity of 32° A P.I. Complete data regarding the amount of oil produced and the amount of gas injected have not been made available for publication. For the last 2 years production has been maintained close to 25 bbl. per day from the wells on the property. In reviewing what has been accomplished by this experiment, it has been found that the decline of production in the past 5 years has been checked enough to make it possible to take a property which could not have been paid out under normal conditions and operate it profitably.

The character of the producing formation has been discussed by Wallace Lee, Kansas State Geological Survey, in a paper, "Mississippian Limestones in Central and Eastern Kansas," which was published by permission of the director of U. S. Geological Survey in The Oil and Gas Journal, June 27, 1940, Page 102. In this paper he states: "The producing zones in Mississippian rocks appear to be independent of the stratigraphic formations. Production is dependent on the porosity of the limestones. The base leveling of the folded rocks brought the various formations of the Mississippian to the surface at different places and subjected them to weathering and leaching. In some places where the ground-water level had been lowered, porous zones are present to a depth of 100 ft. below the surface of the Mississippian."



Location of wells on property where gas injection has been practiced in a lime pool to check the decline of oil production

The producing organization which has been carrying on the injection of gas in lime discussed here has been conducting a pressure-maintenance gas-recycling project for the past 6 years in a field which extends for a distance of 3½ miles in a pool known as the Quincy-Batesville shoestring trend. Production is obtained from the Bartlesville sand at a depth of 1,450 ft.

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BOOK REVIEW

"ANNUAL REVIEW OF PETROLEUM TECHNOLOGY," Vol. 5 (covering 1939), F. M. Garner, Ph.D., M.Sc., F.I.C., general editor.

Collaboration between American and British authors has made possible the production of Volume 5 in the series of "Annual Reviews of Petroleum Technology." The book is a complete repord of developments in all sections of the industry. Each chapter contains a full bibliography of technical papers and patents published during 1939 and early 1940. Whether as a work of reference or as a rapid and comprehensive survey of the entire industry, the book is indispensable to all engaged in the science and technology of petroleum. The book is available at a price of $1.35 to members and $2.70 to nonmembers from the Institute of Petroleum, the University of Birmingham, Edgbaston, Birmingham 15, England.

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Recently Developed Methods for

The Inspection of Tubular Goods and Sucker Rods

By H. M. HENDERSON
Standard Oil Co. of California, La Habra, Calif.

A. P. I.

This paper describes the general construction, methods of operation and some of the results obtained through the use of recently developed equipment, for the inspection of tubing, drill pipe and sucker rods that have been in service for a period of time. Material costs constitute one of the main items of production expense and it was mainly in regard to reduction of material costs that the equipment described here was developed. The paper was presented before the spring meeting of Pacific Coast district of the American Petroleum Institute, Division of Production, Los Angeles, Calif., March 11, 1941.

WHILE wells are being produced by natural flow or by gas lift, the maintenance of the tubing string offers little or no problem as little if any wear occurs inside the tubing except in rare cases where a large volume of sand is produced with the oil, or where corrosion is a factor. However, when it becomes necessary to pump the well and sucker rods are installed, friction between the inside wall of the tubing and the sucker-rod couplings results in a wearing away of the surface of both, the extent depending mainly on the straightness of the hole and to a lesser degree on the character of the fluid produced, pumping speed, etc.

Worn sucker-rod couplings are readily detected when the string is pulled and are replaced as the situation requires. Worn joints of tubing are also replaced at times before actual failure occurs, but the detection of worn points is not so easy and a knowledge of the extent of the wear is not so apparent to the well crew as in the case of the sucker rods for it is impossible to determine the amount of the wear and in many cases to even detect the existence of it without special instruments.

It was to improve this situation that the Dia-Loy tubing-survey instrument was developed. This instrument may be used to survey tubing either on the rack or in the well.

Fig. 1 shows a diagrammatic arrangement of

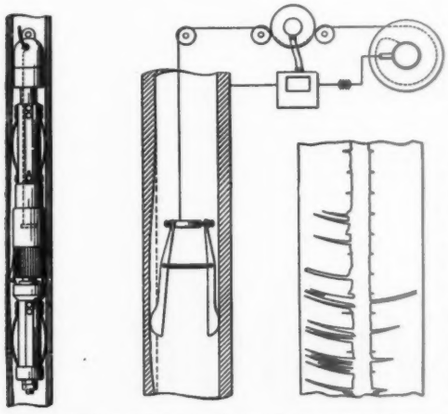

Fig. 1—Diagrammatic arrangement of the tubing-survey instrument in a section of tubing

the instrument in a section of tubing and the manner in which it operates to detect the worn spots and the extent of the reduction of wall thickness. The instrument is set, before running into the tubing, to indicate when the remaining wall thickness is less than a given amount. For example, if it is set to indicate a remaining wall thickness of less than ⅛ in., no electrical contact is made unless the remaining wall at any point throughout the length measured is less than this amount. The actual wall thickness may be any amount between ⅛ in. and the full thickness of new pipe if no electrical contact is made. In other words, the instrument only indicates if the remaining wall is less than the amount for which the instrument is set.

By resetting the instrument to indicate other remaining wall thicknesses, tubing may be segregated into different classes and utilized to the most economical advantage.

As is readily apparent, the instrument does not measure the actual wall thickness of the pipe, but indicates the inside diameter opposite each one of the fingers. The remaining wall thickness is determined by comparison of this diameter with the nominal o.d. of the pipe. Commonly used settings of the instrument are for 1/16, 3/32 and 1/8 in. remaining wall in order that tubing may be classified sufficiently for proper segregation. . . .

When surveying tubing on the rack, an "electrical buzzer" indicates the existence of a worn area, while a strip recorder with pen records the length and depth of worn area in the tubing when a survey is conducted in a well. To determine the length of the worn area in tubing surveyed on the rack, the operator notes the distance the instrument is moved while the buzzer is buzzing.

In order that the entire circumference of the tubing be surveyed without the necessity of rotating the instrument, contact fingers are spaced at ⅜-in. intervals around the circumference of the tool and these will detect a worn spot as small as ⅜ in. in width.

Fig. 2 shows a strip chart made from a survey of a string of tubing in the well. This illustrates the segregation of joints with different minimum remaining wall and the location of the worn spot in each joint. The horizontal lines on the chart indicate the location of the couplings. Any swing of the pen drawing each chart indicates a point where the remaining wall thickness is less than the tool is set for when that particular run is being made. It is noted that the space between joints at each coupling is shown on all charts.

In a survey conducted at a well which had caused much trouble from tubing leaks and where conclusions had been reached to replace the string with a new one, it was found that 106 out of 152 joints had a remaining wall of more than ⅛ in. and could be rerun safely while the joints with less remaining wall were replaced with new material. Considerable saving was thus accomplished and a definite knowledge of the existing situation was obtained.

A survey conducted on a rack full of tubing which had been segregated by visual inspection indicated that much good pipe had been segregated as scrap and considerable scrap pipe had been classed as good, indicating that purely vis-

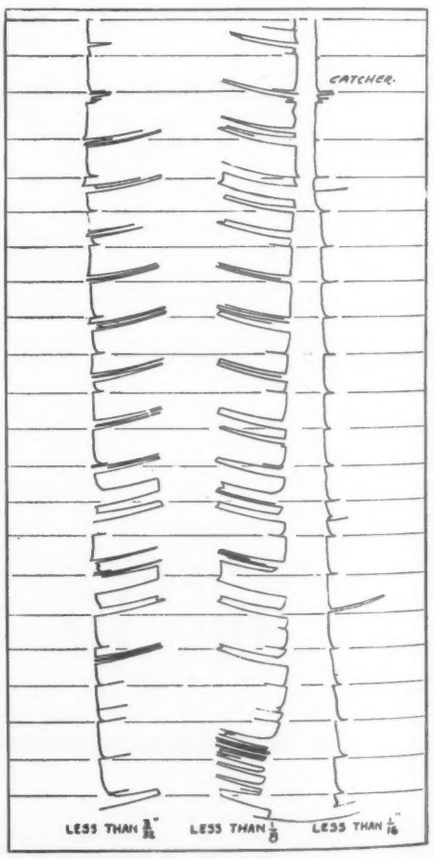

Fig. 2—Strip chart made from a survey of a string of tubing in a well

ual inspection of worn tubing would probably lead to much expense and trouble due to the improper classification and use. . . .

Inspection of New and Used Sucker Rods

Oil-well sucker rods constitute one of the major items in the maintenance of a pumping well. Sucker rods are subjected to severe service and until recently there has been no means of determining where a probable failure was liable to occur, hence there was no opportunity of removing the defective rod before failure actually occurred.

It is generally conceded that sucker-rod failures are due to "fatigue" of the steel. This fatigue may be caused by concentration of stress at a nick in the rod produced by rough handling, a corrosion pit, a kink in the rod produced in service, or by faulty handling, or by continued excessive overloading of the rod string.

It has never been found possible to correlate the progress of "fatiguing" in any material with the commonly known properties of the material such as tensile strength, charpy impact value, Brinell hardness, etc., hence it has been impossible to know to what extent the fatiguing has progressed or how to predict the time or place of failure.

Such being the case, the only criterion available for use in the retiring of a string of sucker rods from service or relocating at a well where lighter service was required was "when the number and frequency of failures appeared to be too high to economically continue the string in service at the particular location."

It is generally assumed that the upper rods in a string made up of a single rod diameter will have been fatigued to the greatest degree. This is probably true in the majority of cases as these rods carry the greatest load. However, it is conceivable that such is not always the case due to stress waves set up in the string by the pumping motion and the natural period of stress wave or vibration period of the string.

In removing a string of rods from a well, no method has been available to segregate rods whose remaining strength makes them suitable for further service from those which should be scrapped.

Recently, equipment has been developed by the Magnetest Corp. for the surveying of a string of rods as the rods are being pulled from the well and from the records drawn on the strip chart by the recording instrument, to classify the rods according to the amount of working that the steel has undergone. From the information thus obtained, rods classified as poor are removed from service or relocated at a point of lower loading in the string.

The company has done a great deal of work in developing its method and has sorted out rods which it classifies as "poor" from strings that have had frequent failures and thereby reduced the frequency of failures. The method appears to have possibilities and it is hoped that it will be fully developed so it can be depended upon to accurately sort out from a string rods that are liable to fail.

The operation of the instrument depends upon the magnetic properties of the material in the sucker rod. The sucker rods are drawn through the instrument as they are raised from the well. This assembly contains a group of primary coils which surround the rod and are energized by an electric current drawn from an a.c. motor-generator set mounted on the truck which also carries the recording instruments. A set of pickup coils which surround the rod are also carried in the well-head assembly. A voltage is generated in the pickup coils by the magnetic field which is induced in the sucker rod by the energized primary coils and it is the variation in this voltage which is indicated by the recording instrument.

This in a general way is the manner in which the device operates, but one glance at the recording equipment readily demonstrates that it is far more complicated than the above description indicates.

A novel electric arrangement causes the strip chart in the recorder to travel in exact synchronism with the rods, one division on the chart corresponding to 1 ft. of sucker rod, thus the exact location of any condition recorded may be inspected after the rod is laid down. . . .

The well-head assembly is connected directly to the tubing head by suitable nipples and bushings and the rod elevators are set on top of the Magnetest well-head assembly. The well crew handling the elevators stand on an elevated steel platform which has suitable safety railings around it. . . .

Table 1 shows the records of rod failures in a group of wells "before" and "after" removal of rods found to be poor by the method. Operating conditions were constant under both periods of the test.

Fig. 3 illustrates various new-rod characteristics

TABLE 1—RECORD OF ROD FAILURES IN A GROUP OF WELLS BEFORE AND AFTER REMOVAL OF POOR RODS

Well	Depth	Rods (size in in.)	S.p.m.	Stroke length	Plunger size (in.)	Rods removed after survey (size in in.)	Failures 1 year before survey	Period operated since survey (months)	Failures since survey
A	7,170	37 1 54 ⅞ 147 ¾	18	108	1¼	54	60	2½	1
B	3,590	111 ¾	12	44	1½	12	1	2½	0
C	6,569	93 ⅞ 124 ¾	was 16 now 23	60	1½	12	118	5	*0
D	4,547	43 ⅞ 108 ¾	24	54	1½	38	40	2	1
E	4,500	79 ⅞ 70 ¾	24	54	1¾	11	25	2	0
F	4,175	59 ⅞ 77 ¾	24	40	2	75	84	3	0
G	6,139	92 ⅞ 111 ¾	20	48	1½	46⅞ 93¾	20	3	0
H	4,000	37 ⅞ 95 ¾	22	66	2¼	21	16	3	0

*Production doubled.

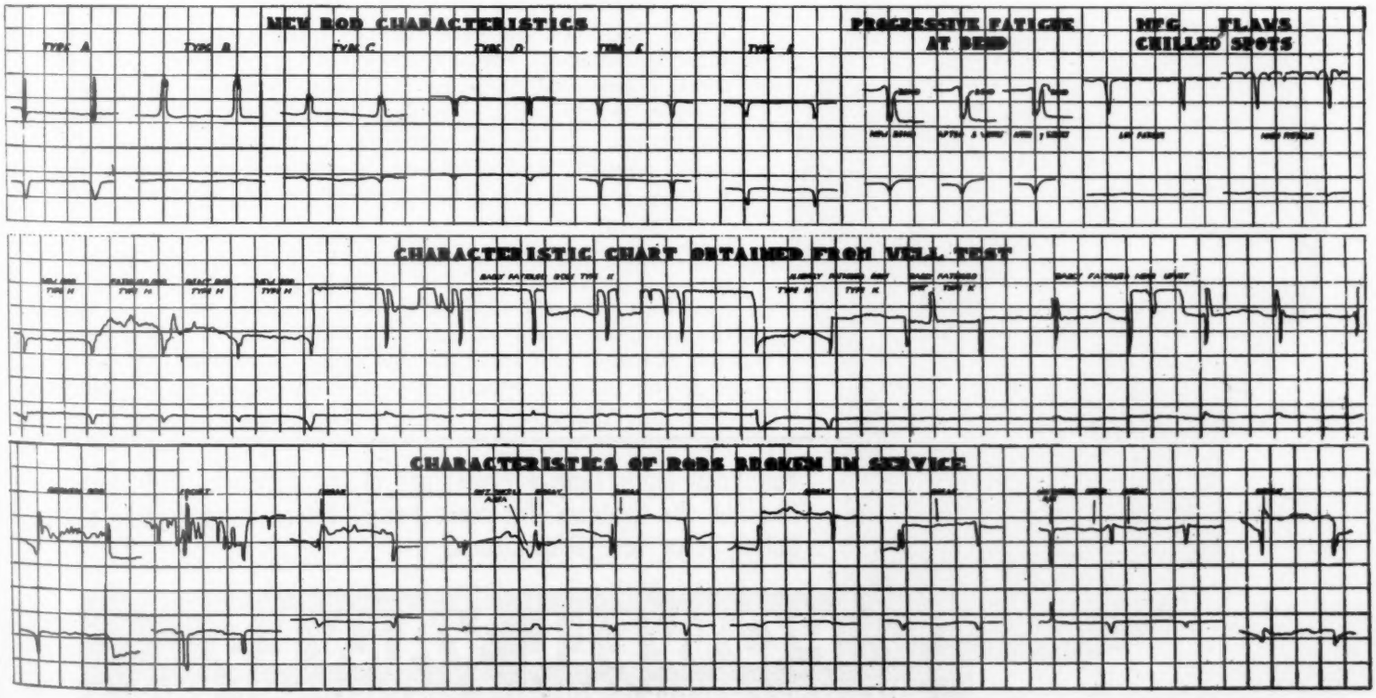

Fig. 3—Various new-rod characteristics and typical used-rod characteristics after fatigue later occurred, as drawn by the magnetic survey recorder

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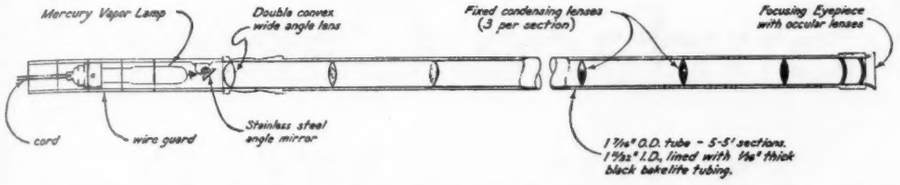
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Fixed condensing lenses (3 per section)
Focusing Eyepiece with ocular lenses
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wire guard
Stainless steel angle mirror
1 7/16" O.D. tube - 5-5' sections, 1 3/32" I.D., lined with 1/16" thick black bakelite tubing.

Fig. 4—Sectional drawing of telescopic instrument for inspecting the internal surface of drill pipe, showing the general arrangement of the tube, lenses and light.

and typical used-rod characteristics after fatigue has progressed and failure later occurred, as drawn by the Magnetest recorder.

As shown by these charts, each type and make of rod produces its own characteristic graph, depending upon manufacturing process and analysis of steel used. It is thus evident that proper identity of the rod must be available in order that the chart may be properly interpreted. The lower line on the chart, commonly called the "phase" graph, may be considered as a reference line for the upper graph which indicates the condition of the rod. As fatigue progresses in the rod, the upper graph on the chart rises. Experience in surveying the different types and makes of rods permits the survey engineer to estimate the extent to which fatigue has progressed and to recommend future use or disposal of the rod. . . .

It has been found in a number of cases that new rods have shown the same characteristics on a Magnetest chart that are obtained from rods in a well in which failures are occurring. In other words, they appear to be poor material. One possible answer to this is that the material has high internal stresses which have not been relieved during fabrication. Just how this might promote early failure is not definitely known.

A great many interesting circumstances have been brought to light by these surveys and while many problems remain unanswered at this time, it is probable that longer experience will reduce this number a considerable degree. . . .

Inspection of Drill Pipe

Defects in drill pipe which may weaken the strength of the pipe are seldom apparent or visible to the eye because they generally occur inside the pipe or at the junction of two joints and inside the coupling. . . . In the past, the decision as to when a string of pipe should be retired from drilling service and converted into line pipe was reached when a number of failures had occurred in the string and when it was felt that the string had been used sufficiently to have served its normal life.

Having had no means of segregating the good joints remaining in the string from the ones which were liable to cause early failure, the entire string was usually retired at the same time. With the Tuboscope it is possible to inspect the internal surface of a 50-ft. length (by inspecting 25 ft. from each end) thus making it possible to inspect drill pipe in doubles.

Fig. 4 is a sectional drawing of the instrument, showing the general arrangement of the tube, lenses, light, etc., which enable the operator to have a close-hand view of the pipe wall as much as 25 ft. inside the pipe.

In effect, the instrument is a telescope with a double convex wide-angle objective lens at the end adjacent to the object to be viewed, and a series of condensing lenses every 2 ft. in the space between the objective lens and the focusing eyepiece with ocular lenses. It is constructed of five 5-ft. sections which may be used either singly or any multiple of the five lengths up to the full 25 ft. in length. A 1,000-watt mercury vapor lamp is attached to the end of the Tuboscope just beyond the objective lens in such manner that it lights the surrounding drill-pipe wall and enables the operator to make a close inspection of the entire circumference of the pipe for a length of approximately 9 in. without moving the instrument.

In operation, the inspector keeps his eye against the eyepiece and walks slowly toward the end of the pipe, pushing the Tuboscope ahead of him into the pipe and inspecting the entire inner surface as the instrument progresses into the pipe. A set of spring centralizers keeps the instrument in the center of the pipe and a framework similar to an overhead tramway supports the instrument when too great a length overhangs the end of the pipe. Sometimes an assistant takes the place of the tramway. To enable the operator to look at right angles to the pipe axis down into a pit or defect in the pipe wall, a mirror is centered on the axis of the pipe just beyond the objective lens and tilted at an angle of 45°. This acts as a periscope and gives the operator a close view directly at the spot. A small depth gage, which is so arranged that it will readily drop into and be drawn from a pit in the wall, permits the operator to actually measure the depth of the pit or other defect. Photographs may be taken by attaching a special camera to the focusing eyepiece after the instrument is focused on the spot to be photographed.

Preparing Pipe for Inspection

Before inspection with the Tuboscope the pipe is thoroughly cleaned by a wire brush which is pushed through the drill pipe on the end of a piece of ½-in. pipe. The brush is rotated by an electric-motor-driven hand drill which is attached to the end of the ½-in. pipe and held by a helper who pushes the brush through the joint of drill pipe being cleaned. Air is forced through the ½-in. pipe by a small air compressor which is connected to the end of the ½-in. pipe by a hose and a swivel connection. After removing the brush, air is again blown into the drill pipe to discharge any loosened material.

The commonest defects to be looked for when inspecting drill pipe are (1) corrosion pits; (2) pits caused by the rolling of foreign material into the pipe wall during fabrication at the pipe mill; (3) laps, seams, folds, etc., caused during fabrication; (4) fatigue cracks, usually found in the bottom of the pits; (5) the butting of joints in a collar; (6) fluid washing or cutting, usually caused by some obstruction which created eddies in the fluid stream. . . .

It is readily realized that much valuable information can be obtained regarding the condition of a string of drill pipe by careful inspection of the inside surface similar to the external inspection that is usually made. Probable costly failures may be avoided by removing questionable joints from the string before failure. Also joints in good condition may be kept in service instead of being retired to line-pipe class along with defective joints. . . .

Acknowledgment

It is desired to acknowledge the able assistance of Mr. Tedford and Mr. Whittaker of Dia-Loy, Mr. Irvin of Magnetest and Mr. Lance of Tuboscope, in the preparation of this paper.

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Questions and Answers

We have a well nearly 3,400 ft. deep and oil stands over 300 ft. in the hole. The fluid level cannot be lowered by bailing but the well will not pump continuously. After pumping a few barrels, the pump sucks air; it repeats the performance. The well has a considerable flow of gas.—J. T. L., Denver, Colo.

From your description of the well, it sounds as if this well were gas-locked. This frequently happens, the gas coming out of solution as the fluid is sucked into the working barrel. When the plunger falls it is cushioned by the gas between it and the standing valve. Fluid is prevented from entering the pump by this gas.

This gas locking may or may not be accompanied by a pound. The oil produced will generally be frothy and if any salt water is present, an emulsion is likely to be produced. This subject was discussed completely by T. P. Sanders in an article, "Recognizing and Overcoming Gas Lock in Pumping Wells," The Oil and Gas Journal, June 20, 1940, Page 43.

He points out that a pump in which the traveling valve approaches close to the standing valve minimizes this trouble. Proper spacing of the valves, running the pump faster, use of an oversized or streamlined standing valve, slowing down of the pump, use of a smaller plunger and barrel, use of a gas anchor, maintenance of minimum pressure on the casing and allowing sufficient space around the pump and tubing to permit the free gas to escape up the hole are all helpful in overcoming this condition of gas locking.

If the well is making considerable gas, it may be possible to use some other system such as air or gas-lift for raising the oil. This would have to be determined by a test of the well to determine its capabilities.

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Fire Hazard in Oil Plants Less Than in Average Home

You can revise all your ideas about the fire hazards in the average petroleum plant, according to J. Howard Myers, director of the safety and fire-prevention division of the Atlantic Refining Co. Students of probabilities now find, he asserted, that oil refineries, tank farms, and service stations, where highly inflammable liquids are manufactured, stored, or sold, are only one-third as likely to have a serious fire as the average residence.

"The disclosure of this surprising fact is the highlight in a new sound moving picture which is now being shown by representatives of the Atlantic Refining Co. in this territory," said Mr. Myers. "The film reveals that the probability of a tank fire in the average petroleum plant is one fire per plant in 450 years. The corresponding probability for the average residence is one fire in every 150 years."

The safety film studies the causes of fires with particular reference to the petroleum industry and demonstrates various means of preventing fires and putting them out once they start. The climax of the film is a vivid demonstration of the latest methods employed in the petroleum industry to combat tank fires with foam blankets.

Repair of Surface Casing On Rotary Drilling Wells

By HARRY F. SIMONS

SURFACE pipe, if properly installed, will generally not give any difficulty during the drilling of the well, but there are a number of factors in rig operation which may cause it to break somewhere between the supporting spider and the casing seat. Occasionally the top joint or joints may work loose or become broken, but more often it is the bottom section of the surface casing which gives the trouble; the former is simple to repair, but the latter often causes considerable difficulty.

Much of the trouble can be avoided if the casing is properly landed and cemented and if reasonable care is taken in preventing unnecessary abuse during the drilling of the remainder of the hole. Once a break has occurred, there is no alternative but to repair it before drilling is continued. Unfortunately the break does not occur immediately after installing the casing but later when the hole is nearing completion or is deep enough to represent a considerable investment.

The amount of surface casing used varies from as little as 30 ft. in some wells to as much as 1,000 ft. in others. There have been some rotary wells as deep as 1,300 ft. which have been drilled without any surface pipe. Principal purpose of the pipe is to prevent erosion of soil from under the derrick and contamination of upper water-bearing sands and to provide a means of controlling blowouts and other difficulties. The control assembly used in drilling is attached to the surface pipe.

General practice is to drill the approximate amount of hole desired and then try to find a shell, or hard formation, on which to land the surface pipe. In many fields, the amount of pipe run depends on the location of a formation which is definitely hard and which will support the weight of the casing. In other cases, no hard streak can be found or there may be some reason which definitely causes the pipe to be set at some other point.

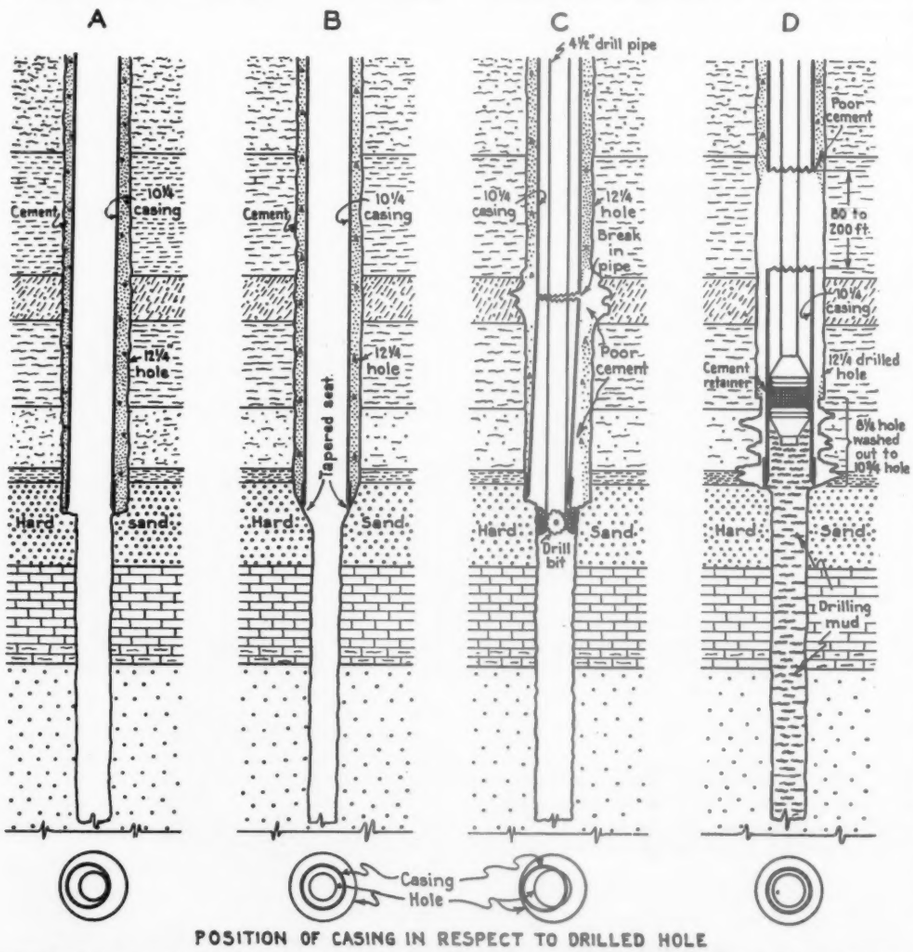
A hole of medium-size diameter is easier to maintain in its vertical course and most operators drill an 8¾-in. hole and then ream it to 12¼-in. or drill an 11 or 12¼-in. hole and ream it to 15½ or 17½-in. Where unusually long strings are run, or some particular difficulty has presented itself, the hole may be drilled and then reamed twice to get it to its final diameter. The starting hole may be used as a finder for the shell on which to set the casing, the hole being reamed to that point with a rat hole remaining below it.

The casing is then run and cemented in place and after allowing 24 or 48 hours for the cement to set, drilling is resumed. Generally the first six or eight joints of the pipe run in the well are tack-welded at the pipe-collar connection. Purpose of tacking the bottom joints is to prevent their backing off while drilling. Many operators are now using welded-joint surface casing.

Failure of the surface casing is generally caused by a combination of circumstances, including improper installation and operation. Installation causes include improper landing of the casing, failure to center it in the hole and a poor cement job. Trouble sources in the drilling operation are poor alignment of the hole, rotary table and blocks, crooked drill pipe and kelly, lack of rubber protectors on the pipe and use of excessive rotating speeds.

Improper landing is due to failure to keep accurate measurements of the drill pipe and the casing or hurry in doing the job. If the hole is partially clogged with cavings, the pipe should be worked up and down and mud circulated until the casing reaches the landing point. A centering device (several commercial types are available) is helpful in establishing concentricity between the rathole, surface hole and casing. A method which is certain to produce good results is the use of a casing seat made by a tapered reamer. This makes the change from the larger size hole to the smaller one the shape of a cone instead of a sharp break.

Where the pipe is not being set on a hard shell and the area in which the well is drilled is notorious for surface-pipe trouble, a better job of landing can be done by employing a wall scraper to enlarge the lower portion of the hole. This will provide a large block of cement as an anchoring point for the casing.



POSITION OF CASING IN RESPECT TO DRILLED HOLE

(A) Shows how casing shoe is ordinarily cemented, with no provisions made for centering; (B) shows how casing can be centered through use of tapered casing seat; (C) shows how holes are sometimes lost because of broken casing catching drill pipe; (D) how broken casing can be raised and recemented with cement retainer

Advances in Cementing Practices

There have been several advances in the cementing of surface pipe in the past year. The rotation of the casing while the cement is being pumped into the pipe and displaced into the hole insures even distribution of the slurry around the pipe; where the casing is not rotated, there is danger of the cement channeling and leaving part of the pipe unprotected. Several attempts have been made to use aggregate consisting of slurry and chat, or gravel, for cementing the surface pipe in place; advantages come from the better bond between the pipe and the cement and the hole.

Trouble is often caused by pumping the plug on top of the cement too close to the bottom of the pipe. In fact, there have been cases where no float or guide was used on the pipe and the plug was pumped out of the bottom of the casing.

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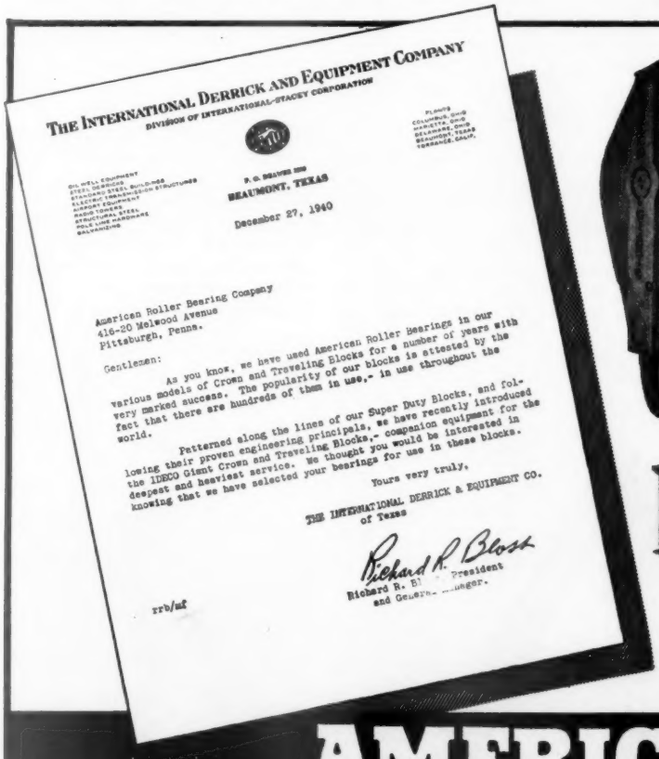

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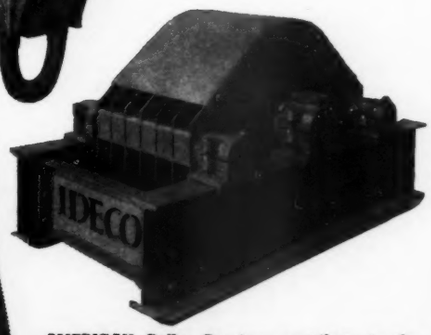

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The cementing swedge is generally removed from the surface casing for insertion of the plug and due to the unbalance existing between the cement slurry inside the pipe and the mud outside the pipe, considerable air is introduced into the system. When the plug is pumped too close to bottom, the cement is displaced from around the lower portion of the pipe by the entrapped air. In one field, the trouble with surface-pipe failures was cured by stopping the plug higher and leaving more cement in the pipe.

Operating Failures

There is a constant pounding of the surface casing by the drill stem during the drilling operation. If the pipe is unsupported at the bottom or is in any strain, a succession of blows will eventually cause failure; a cement void behind the pipe will produce the same result. Use of rubber protectors on the portion of the drill stem operating inside the surface pipe will cut down the possibility of damage. The same care should be exercised in selecting the drill pipe for use inside the surface pipe as is taken in choosing the pipe for the lower portion of the string. Crooked joints at this point will aggravate any tendency of the surface pipe to fail.

Misalignment of the hole and equipment is not uncommon on rotary drilling rigs, and it produces a wide range of troubles, including surface pipe breakage. Care in lining up the crown block, traveling block and rotary table before starting the hole will eliminate much of the trouble. The surface pipe should be blocked in the rotary table as soon as the cement has been placed around the pipe. Any misalignment can then be corrected by slight changes in the position of the crown block.

Rotary speeds have been increasing for the past decade and the ultimate is not in sight. This increases the abuse which the surface pipe must suffer and any condition which will cause whipping of the drill pipe against the surface casing should be avoided if possible.

Sudden Failure

Generally failure in the surface pipe occurs suddenly and without warning. If the break is in the upper portion, the first sign will be a reduction in the mud in the flow line while the cellar will begin to fill up and mud will start flowing around under the derrick floor. Breaks in the lower portion of the pipe will cause a binding of the drill stem or may not be noticed until the bit fouls on the broken-off portion as the drill pipe is being pulled from the hole.

Repair of an upper break is rather simple, the top portion of the pipe being pulled from the hole and a die collar or nipple installed on it. The top portion can then be screwed into the lower and cement pumped down around the outside of the casing to reinforce it. If the top portion cannot be pulled from the hole, a bridge can be placed in the lower section and cement squeezed through the break. The pipe should be centered to insure a good job.

Trouble may often be experienced in getting the drill pipe from the hole in case the bottom portion of the surface pipe has fallen over in the hole. In some cases, getting the drill pipe out of the hole may require as much as a week and the employment of special tools to straighten up the broken-off portion before the drill pipe can be freed. After the drill pipe has been recovered, the surface pipe will have to be repaired before drilling can be resumed. In one case where the drill pipe was returned to bottom before repairing the surface pipe, it required several weeks to recover it.

If the bottom section has not fallen down the hole, it can be recentered and then cemented in place. For centering the pipe, a long spear can be made from a tree or timber with a groove cut down one side to permit passage of the cement. This may be run on the bottom of the drill pipe or below a packoff tool which will force the cement downward and around the loose section of pipe. The same method can be used to cement in place a section of surface casing which has fallen a considerable distance.

A new method of repairing such breaks was introduced during the past year. It was originally designed to repair producing string or casing, the bottom portion of the string having fallen down the hole while a window was being cut opposite an upper producing section. It has since been used to repair several surface-casing breaks.

The objective is the return of fallen suction pipe to its original position, centering it in the hole and then cementing it in place. A cement retainer is modified so it becomes a casing spear in addition to a means of forcing drilling fluid and cement slurry around the pipe. This is done by

(Continued on Page 64)

Elevated Sluice Box Cools and Degasifies Drilling Mud

ONE of the most important drilling problems confronting some of the operators in the 10,000 to 12,000-ft. producing areas of San Joaquin Valley in California is that concerning the proper mud temperatures and viscosity control. As the drill penetrates depths below 8,000 ft., high earth temperatures begin to break down the drilling mud with a consequent frothing and dangerous lowering of the viscosity.

A large company drilling in one of these areas uses an inexpensive but very effective device for cooling the drilling mud as it comes from the well. As shown in the accompanying (left) photograph, it consists essentially of an inclined 24-in.-high by 15-in.-wide metal trough or "sluice," on the bottom of which are vertical 4-in. steel plate baffles arranged in zigzag manner across the floor. The mud, entering the sluice at the upper end, is thoroughly agitated and aerated on its way down, losing heat, and allowing much occluded gas to escape. From one-third to one-half of the mud is bypassed through the device.

Made of strong all-welded sheet metal, strengthened along the edges with angle iron, and with ¾-in. pipe for interior crossbracing, the 30-ft. box shown is elevated at approximately a 30° to 40° angle. This angle can be adjusted to meet the requirements of changing mud conditions, however, by means of 4-in. pipe supports that slide up and down inside of the vertical 5-in. pipe A-frame resting on the ground.

Lateral strength of the structure is obtained by two 4-in. lengths of pipe extending along the bottom at each side. One of them is connected at the lower end by a union to the mud line and conducts the mud up to the point where it is discharged into the top of the sluice. Both pipes also serve as skids to aid in moving it from one location to another.

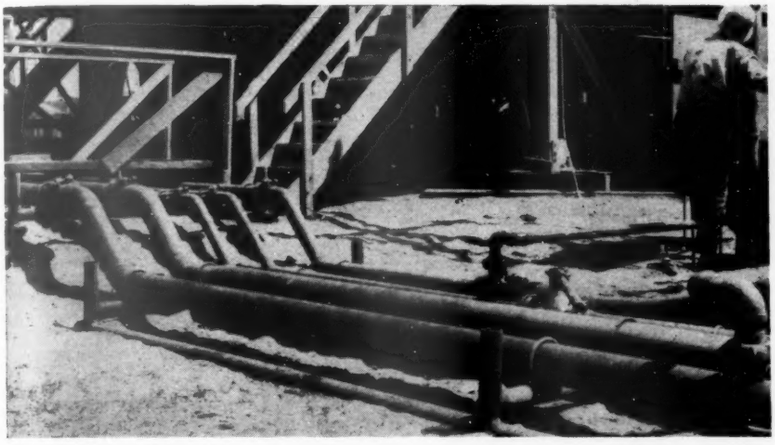
While the device was found to be not entirely necessary except while drilling the last several thousand feet, it nevertheless proved to be a worth-while piece of equipment. Mud temperatures of 180° F. as it came from the well were lowered to around 135° to 140°. Mud caking was reduced considerably, and the pumps operated much more efficiently with the cooler mud.

The photograph at right shows a wooden trough of similar construction in operation on another rig, illustrating the agitation and cooling action to which the mud is subjected. While the wooden trough performs the desired functions, its short life and lack of flexibility make the metal box more desirable.

Operating Ideas

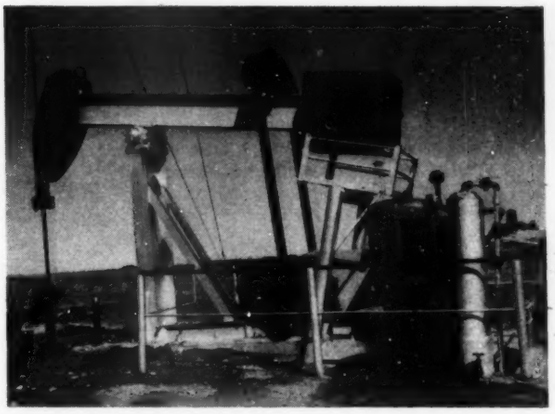
Mounted Service Lines Aid Moving

In addition to the complete unitization of the drilling rig, draw works and other equipment, one company has found it practical to mount service lines to each drilling well on skid-type unitized bases approximately 15 ft. long. A centralized row of service lines for steam, mud, gas, oil and water run the entire length of its lease. It is from these lines that the units of the type illustrated connect to each of the drilling locations. All of the lines in each of the sections correspond exactly to those in the next, and are quickly torn down and reassembled by the use of single-bolt-type unions when the rig is skidded from one location to another. U-bolts firmly tie each pipe in the section to the 3-in. crossbars of the skid base. Fittings and gates welded into the central lines exactly correspond to the requirements of each new location and allow these short connecting units to be immediately assembled without further cutting or welding. The mud line to each well is connected to a mud-conditioning plant located in the center of the lease.



Vat Cools Air-Pump Cylinder

Where climatic conditions impose a heavy cooling load on the fins of the air compressor used to flow the wells supplying boiler feed water, overheating may cause breakdown or rapid drop in valve efficiency and may even result in water shortage. To provide cooling for the air end of the compressor, one company sets the air end in a vat or tub, welded up from tank steel to surround the lower portion of the unit, flowing cold water into the base of the vat and permitting it to overflow through a fitting near the top. When thus cooled, the compressor maintains full efficiency during hottest weather, with the water being piped to the feed-water pond and there used when necessary.



"Headache" Post Protects Both Engine and Workman

In the Grayburg field of Eddy County, New Mexico, one operator devised the "headache" post arrangement shown here to prevent the beam from striking any workman while he is servicing the multicylinder engine or pump. Also in the event of a rod break, or when working over the well, the support will catch the counterweight and prevent it from injuring the engine or housing of the reduction-gear drive.

Combination Flow and Jet Line

A well being drilled in Oklahoma City had the mud pits located a half block away from the derrick. The mud returning from the hole was returned to the pits through an 8-in. pipe line. For disposal of the water and mud jetted from the cellar, the jet line was connected into the flow line. The photograph shows the flow line coming out through the wall at the end of the cellar stairway, while the jet line comes over the top of the floor and drops down to be welded into the flow line at the top of the turn.

Refrigerated Mud Proposed for Overcoming Heaving Shale

By C. P. BOWIE and R. V. HIGGINS

The effort to overcome heaving shale in the rotary drilling of oil wells has led research men along many paths. The accompanying article presents the theoretical considerations involved in a novel approach to the problem, the use of a refrigerant to hold the shales in place. This method has never been tried in a drilling operation and is presented here because of the background and interesting calculations employed. These will apply to other problems encountered in drilling. Use of the method would obviously produce complications in the drilling operation.

IN various parts of the United States so-called heaving-shale formations interfere with oil and gas-well drilling. Cozzens[1] mentions them as occurring in Ohio, West Virginia and Kentucky. The authors know that they are a problem in several parts of California, and it is well known that large areas in Texas and Louisiana along the Gulf Coast are underlain by these formations. In that district they are found at a depth of around 6,000 ft. and have caused great annoyance and expense in well-drilling operations. Millions of dollars have been expended in attempts to drill them. Most of those attempts have been failures.

Whereas shales in place undoubtedly contain appreciable quantities of moisture, they nevertheless appear capable of absorbing relatively large additional quantities if water comes in contact with them. Moreover, some shales before penetration by the bit may have absorbed over a period of time enough moisture to flow under moderate pressure differentials. Many oil operators believe that water from the drilling fluid seeping into formations causes many of the less moist shales to slough. It is to be noted, however, that the walls of the bore hole in shale formations will often "stand up" for weeks and then collapse suddenly, usually upon withdrawal of the drill stem, showing that appreciable time is required to wet shales sufficiently to slough with seepages from drilling fluid in bore holes.

Action of Oil and Water on Samples

The authors have examined numerous core-barrel samples of heaving shale; several from a well of the Texas Co. drilled near Eureka, Humboldt County, California; and others from various wells drilled along the Gulf Coast. These samples when received were all quite dry. Portions of all of them were immersed in petroleum products ranging from gasoline to crude oil of 37° A.P.I. Although most of them have remained immersed for nearly 3 years, they are unchanged without exception as far as hardness and shape are concerned (January 1941). Portions of the samples that were immersed in water disintegrated rapidly. In 2 to 30 minutes most of them became either small piles of mud on the bottom of the container or a mass of small angular pieces.

Use of Oil or Mixture as a Drilling Fluid

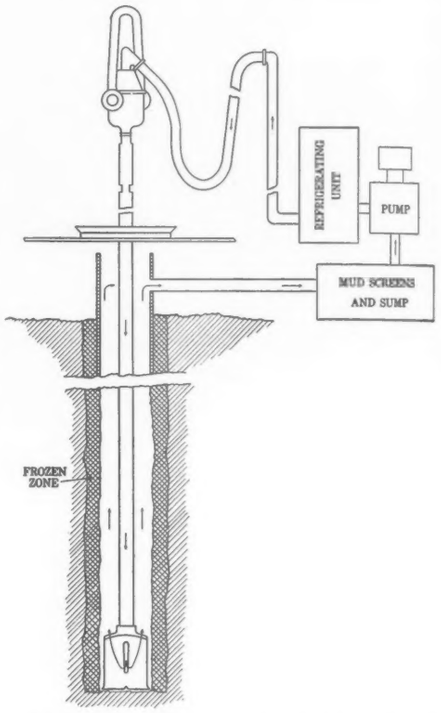
Because of the lack of action of petroleum products on the core samples, it has been suggested that perhaps heaving shales could be successfully drilled using oil for a drilling fluid. This would be true if all shales were not moist enough to flow under moderate pressure differentials. However, if a refrigerated oil were used as a drilling fluid the resistance to movement in the slightly moist shales should be increased and the wet shales solidified by freezing, thereby preventing sloughing. If the reader has ever observed the digging of a ditch through soil containing frost, he has been impressed by the consolidating effect of relatively few ice crystals. Hence, refrigerated oil should be a satisfactory drilling fluid for piercing formations containing heaving shale. On the other hand, many operators in the past have not favored the use of oil as drilling fluid. Some object to it as too light, as the specific gravity of a suitable oil would probably be around 0.8. Another objection seems to be the loss of oil to some formations. However, by properly weighting[2] the oil with a suitable substance and using a wall-building material, these objections can be overcome. Ice crystals formed by freezing the moisture in the formations surrounding the well would also aid in preventing loss of oil.

The authors believe that a more satisfactory and less expensive drilling fluid would be a "water in oil" emulsion in which the water phase is a refrigerant, such as calcium chloride. This could be a "loose" emulsion containing a small quantity of oil and wall-building material and a large quantity of refrigerant, as the two fluids would be agitated during drilling operations and therefore would not separate. It may not be necessary to use an emulsion, as a mixture of oil and water does not flow nearly as readily through porous mediums—the formation or the mud cake on the wall—as do single-phase liquids.

Experiments by the authors indicate that it should be possible to prepare a satisfactory fluid without the use of oil. One such fluid consisted of 25 parts by weight of calcium chloride, 75 of water, and 29 of a good wall-building commercial clay. The Stormer viscosity of the fluid was 23.6 centipoises and the weight 11 lb. per gal. A Union Oil[3] type of filter press, 3 in. in diameter, was used. It was surrounded by a cold kerosene bath. Under a differential air pressure of 100 lb. per sq. in., 12 cc. of calcium chloride solution came through the press in the first 20 minutes when the temperature was —5.0° F. This amount of fluid is smaller than normally flows from the average field mud when tested in such a press at room temperature, notwithstanding the fact that calcium chloride would flocculate the colloidal content of the mud. The thickness of the mud cake was about $\frac{1}{16}$ in.

Byck[4] points out that water and clay fluids lose increasing amounts of water to the formation as the temperature is increased from 70° to 175° F. It is reasonable to suppose that they would lose less and less water as the temperature is decreased. In several experiments performed by the authors this was found to be the case, the decrease in loss being particularly noticeable as the temperature approached the freezing point of water.

Another fluid that gave very satisfactory results consisted of 25 parts by weight of calcium chloride, 75 of water, 20 of a good wall-building commercial clay, and 20 of kerosene. The Stormer viscosity of this fluid was 18.5 centipoises and the weight 9.6 lb. per gal. Five cubic centimeters of calcium chloride solution came through the press, at a temperature —5° F., in the first 20 minutes.



Simplified diagram of proposed method for refrigerating drilling fluids for overcoming heaving shale

No experiments were performed using muds containing sodium silicate (a desirable ingredient in drilling fluids for heaving shale) or other chemicals. However, undoubtedly numerous mud fluids that will prove satisfactory can be prepared.

Equipment and Procedure for Freezing Walls

The accompanying figure is a schematic drawing showing the proposed arrangement of drilling equipment for freezing the side of the hole as drilling proceeds. A suitable drilling fluid is refrigerated to a desired temperature by a refrigerating unit and circulated through the well in the usual way. The drill cuttings are brought to the surface by the returning fluid and removed from the fluid by means of a screen and sump. The fluid is then picked up by a pump, recirculated through the refrigerating plant, and returned to the well.

The refrigerating capacity of the plant (tons

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of refrigeration) will depend mainly on the temperature of the formation through which the drill is passing. However, it also depends slightly upon the pressure in the well because the freezing point of water is decreased by an amount approximately equal to 0.0075° C.[5] per atm. (about 14.7 lb. per sq. in.

Along the Gulf Coast in Texas, as has been stated, heaving-shale formations occur in many wells at a depth of about 6,000 ft. They often extend to a depth of around 8,000 ft. The relation between temperature and depth for wells in that district[6] is nearly linear. An extrapolation of the temperature by means of the linear relationship shows the temperature at 8,000 ft. to be 185° F.

If we assume a temperature at or near the surface of 75° F., the average temperature of an 8,000-ft. well because of the linear relationship will be (75+185)/2 = 130° F. The required capacity of a refrigerating plant to keep the temperature of the refrigerant at 0° F. in a well in which the average wall temperature is 130° F. can be estimated as follows:

The loss of heat per hour can be approximated by the formula:[7]

$$\frac{Q}{\theta} = \frac{KA(t - t_o)}{L_2} \qquad (1)$$

Where Q is the quantity of heat flowing into the refrigerant, B.t.u.; θ is time during the flow of heat, hours; K is the thermal conductivity of the earth, (B.t.u./(hour) (square feet) (°F./feet); A the logarithmic mean area through which the heat is considered to flow, square feet; L_2 is the distance from the center of the well to the boundary (which is considered to be the source of heat) of a cylindrical portion of the formation, feet; t is the temperature in the formation a distance L from the center of the well, °F.; and t_o is the temperature of the refrigerant, °F.

The mean temperature t in the formation for the well being considered was determined two paragraphs preceding and is 130° F., and the temperature of the refrigerant is 0° F.; therefore $t - t_o$ equals 130° F.

The Handbook of Chemistry and Physics[8] shows the average thermal conductivity of the earth crust to be 0.004 g. cal./(second) (sq. cm.) (°C./cm.). This is approximately 1 B.t.u./(hour) (sq. ft.) (°F./ft.).

By assuming that a steady-state radial flow of heat from a distance of 5 ft. (equals L_2) from the center of the well and a well radius of 0.33 ft. (equals L_1), the logarithmic mean area per 8,000 linear ft. can be calculated by the Walker, Lewis, and McAdams[9] equation, which is:

$$A = \frac{2\pi N(L_2 - L_1)}{2.3 \log_{10} \frac{L_2}{L_1}} \qquad (2)$$

Where N is the number of linear feet (8,000). Substituting values in Equation 2, the results are:

$$\frac{8{,}000 \times 2\pi \times (5.00 - 0.33)}{2.3 \log_{10} (\frac{5.00}{0.33})} = 86{,}240 \text{ sq. ft.}$$

The substitution of the foregoing values of K, A, $(t - t_o)$, and L_2 in Equation 1 results in:

$$\frac{Q}{\theta} = \frac{1 \times 86{,}240 \times 130}{4.67}$$

$$= 2{,}400{,}000 \text{ B.t.u. per hour}$$

The refrigerative capacity required is:

$$\frac{2{,}400{,}000 \times 24 \text{ B.t.u./day}}{(288{,}000 \text{ B.t.u./day})/\text{ton}}$$ which yields 230 tons.

In a similar manner the capacity of a plant needed to keep the refrigerant in the well at —20° F. was found to be 230 tons.

Although it was necessary to make several rather arbitrary assumptions in the foregoing calculations for the required size of the refrigerating plant, nevertheless the results of these calculations are nearly the same as those that were obtained by a more complicated method which required no assumptions. In the method requiring no assumptions, values for the unsteady-state radial flow of heat from the formation into the refrigerant were determined from the curves of Hurst[9] after the necessary changes had been made in the ordinates. From these curves of Hurst the quantity of heat flowing per hour at any time or at any depth in the well can be determined.

The quantity of heat flowing per hour after the last foot of hole had been drilled was determined for each 1,000-ft. point, making eight points in all. These values were plotted on graph paper, having the quantity of heat flowing as the abscissa and the depth of the well as the ordinate. The area, which was determined by a planimeter, beneath the curve joining the plotted point is the total quantity of heat flowing per hour into the refrigerant and is the maximum load on the refrigerating plant. The results of this method of calculation of the required capacity of the refrigerating plant are about the same as those obtained by the first method, which as has been said required some arbitrary assumptions.

As was previously stated, when the pressure is increased, the freezing point of water is decreased by an amount approximately equal to 0.0075° C. per atm. (about 14.7 lb./sq. in.). It may be of interest to determine the number of

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degrees F. the freezing point of water is lowered by the hydrostatic head of a column of water 8,000 ft. high. The lowering of the freezing point is calculated as follows:

$$\frac{8{,}000 \times 0.0075 \times 1.8}{2.3 \times 14.7} = 3.2° \text{ F.}$$

Where 2.3×14.7 is the height of a column of water that exerts a pressure of 1 atm.; 1.8 is the factor that changes degrees C. to degrees F.; and 0.0075 is the fraction of a degree F. the freezing point of water is lowered by a pressure of 1 atm. Therefore under a pressure equivalent to 8,000 ft. of water, the freezing point of water is:

$$32 - 3.2 = 28.8° \text{ F.}$$

Cost of Plant

Estimates that have been received for a plant with a 200-ton capacity from several manufacturers of refrigeration equipment indicate that a portable steam-driven plant complete with oilfield boilers can be erected at the well for approximately $55,000. The daily operation cost, including labor, fuel and materials, would be around $75.

The cost of calcium chloride is estimated to be $75 per ton.

The time required to freeze the moisture in the formation for a reasonable distance beyond the periphery of the well will be important, as this will affect the rate of drilling. The accompanying table, based on Hurst's curves,* shows the horizontal distance from the periphery of the well frozen in a given time at varying depths and temperatures in the wall when the temperature of the refrigerant at the bottom of the well is held at 0° F. and at —20° F. The table shows that when the depth is 8,000 ft. and the temperature 185° F., a refrigerant at 0° F. will freeze the walls of the hole about ⅝ in. in a little more than an hour and about 1⅛ in. in 24 hours; a —20° F. refrigerant will freeze the walls a little more than ⅝ in. in 1 hour and 1⅝ in. in 24 hours. Probably, however, it will not be necessary at all times for freezing to keep abreast of the drilling bit. Any formation that was penetrated would undoubtedly "stand up" for several hours or even a day or more before sloughing; during this time it would be frozen enough to be consolidated. In soft formations through which the drill would pass rapidly freezing would lag, but when in a harder formation it would overtake the bit.

HORIZONTAL DISTANCE FROM PERIPHERY OF WELL FROZEN IN A GIVEN TIME*

Depth of well (ft.)	Temp. bottom of well (°F.)	Horizontal distance frozen, inches — Temp. of refrigerant bottom of well, 0° F. 1.14 hr.	4.56 hr.	24 hr.	Temp. of refrigerant bottom of well, —20° F. 1.14 hr.	4.56 hr.	24 hr.
6,000	162	0.42	0.88	1.24	0.72	1.44	1.85
7,000	176	0.41	0.85	1.16	0.68	1.32	1.72
8,000	185	0.39	0.80	1.09	0.65	1.20	1.64

*In the calculations pertaining to the time required to freeze a given horizontal distance, the latent heat of freezing and the difference in the conductivity of the frozen shale from that of the unfrozen shale were neglected. These factors were considered in another method of calculation. The mathematics were so involved, however, that only the time required to freeze any given distance in linear flow instead of radial flow was determined. For a short period of time, the distance frozen should be about the same for linear as for radial flow. The answer to the linear problem resulted from the graphical solution of an equation containing: the relation between time and distance for the freezing isotherm, another term the integral of an infinite series that turned out to be the probability integral, another term the integral of an infinite series that turned out to be the series for e^{-x}, and other terms of less interest.

The results of the linear solution showed that the distance frozen in a given time in radial flow would not be much altered by the latent heat of freezing of water and the differences in the thermal conductivity of the frozen and unfrozen shale. This occurs because the thickness frozen increases slowly and the temperature gradient near the well wall quickly forces the heat of fusion to the refrigerant.

Changes in Drilling Technique

Expansion of Pipe.

Departure from conventional methods of oil-well drilling will undoubtedly call for some changes in technique. The authors have the following suggestions regarding some of these:

If the formations above the heaving-shale strata are such that open hole can be drilled to the top of the heaving shale, conditions should be ideal for the use of refrigeration as conventional drilling can be discounted at that point and be followed immediately by the use of refrigerated fluid. The walls of the well would then be frozen and so remain until drilling was completed.

If, however, the strata were such that casing would be required for the upper part of the well provision may be necessary against contingencies arising from changes in temperature. If 6,000 ft. is the depth of the hole at the point where change-over to freezing methods is to be made, and if the temperature at that point in the well is 157.5° F. [(6,000/8,000) (185—75) + 75 = 157.5], the change in temperature of the innermost string of casing from 157.5° F. to —20° F. (using the coldest refrigerant) will cause a shrinkage in the 6,000 ft of pipe of approximately 5.8 ft. Probably an expansion joint of some kind should be put into this string of casing. It is believed that this can be easily installed at the surface, as an ordinary cellar will be deep enough to facilitate the installation and operation.

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possible injury to the casing by reason of "hanging up" against the side of the hole during expansion and contraction caused by temperature changes, it is believed this can be accomplished by using plain-end casing and welding the joints as the casing is lowered into the hole because this will minimize the diameter of the casing at the joints.

As the coefficients of expansion for cement and for steel are approximately equal, and as the movement in the lower 100 ft. of the casing would apparently be only about 1½ in., probably there would be no serious injury to the lower part of the cement behind the casing set for water shut-off. It is suggested that it may be possible to omit the usual cement job on that string of casing because leakage would cease as soon as ice formed.

In drilling with the refrigerated fluid the authors suggest the use of a collapsible bit.[10] A continuous circulation joint[11] is also suggested. This fitting was developed by J. G. Dyer of the Continental Oil Co. The authors are advised that both of these devices are fairly well proved. The collapsible-blade bit can be placed in position or removed from the bottom of the drill stem by means of a wire line. The drill stem remains continuously in the well during the drilling and may be left to become casing when the well has been completed. The circulation joint permits continuous circulation of the drilling fluid even though additional drill pipe is being added.

Velocity of Drilling Mud.

In estimating the cost of a refrigerating plant, a drilling-fluid-volume rate of 700 gal. per minute has been assumed. This may result in somewhat higher fluid velocities than conventionally used. In the arrangement suggested, if 10¾-in. casing for the well is used in conjunction with 5¾-in. casing for the drill stem, a downstream velocity (through the drill stem) of approximately 664 ft. per minute will be required; the upstream velocity will be 268 ft. per minute. It is believed that this will be satisfactory, as the down stream will carry no cuttings.

If salt water is encountered, it may be possible to freeze enough of it, in the vicinity of the well, to prevent the entry of the fluid. A 20 per cent solution of sodium chloride freezes at +1.8° F.[12] If the salt-water flow is accompanied by excessive pressure, there should be no reason why pressure drilling could not be combined with refrigeration.

Summary

Deposits of so-called heaving shale occur in various parts of the United States but are particularly prevalent along the Gulf Coast in Texas and Louisiana. In that district millions of dollars have been spent in unsuccessful attempts to drill through them.

Laboratory experiments on core-barrel samples of the shale show that it disintegrates very rapidly in water, but is apparently unaffected when immersed in oil. This leads to the suggestion that oil be substituted for the conventional drilling fluid made from water and clay. By refrigerating an oil fluid containing weighting and wall-building materials, dry shale will not be wetted, and shale moist enough to flow under moderate pressure differentials would be frozen. Thus such a refrigerated oil for a drilling fluid should prevent shale from sloughing into a bore hole while drilling.

Other refrigerated drilling fluids should prove satisfactory. The authors suggest the use of a "water in oil" emulsion in which the water phase is a refrigerant such as calcium chloride. Perhaps a "loose" emulsion containing a small quantity of oil and wall-building material and a large quantity of calcium chloride solution would be satisfactory, as the fluids would be agitated during drilling operations. The authors have prepared mixtures of calcium chloride solution and materials high in colloids with and without kerosene. In the laboratory tests these mixtures were satisfactory. Undoubtedly numerous drilling fluids can be prepared that will give good results.

It is to be noted that the wall-building properties of clays rich in colloids are enhanced as the temperature of the drilling fluid is reduced. This becomes particularly apparent when the temperature approaches the freezing point of water.

The cost of a portable refrigerating plant suitable for refrigerating the drilling fluid is estimated to be $55,000. Such a plant could be moved from place to place and used again and again.

In introducing this system of drilling some changes will be necessary in the usual drilling technique. These changes are discussed in this paper. None of them seem to offer any particular difficulty.

Manufacturers of refrigerating equipment and operators of refrigerating plants, who have been consulted, are agreed that the application of refrigeration to drilling such formations, from their viewpoint, presents no unusual problem; in fact, some have expressed surprise that such a process as proposed has not long since been adapted to the drilling of oil wells.

The authors appreciate that when departure is taken from conventional procedure more difficulties arise to be overcome than appear on the surface. They believe, however, that none will be met that will prove insuperable. They also believe, and doubtless the reader will concur, that it is only by trying the unconventional that real progress can be made.

Acknowledgments

The authors wish to express their grateful appreciation for cooperation and assistance from the following: John A. Hawkins, vice president and general manager, and Ben H. McMamee, chief engineer, of the Merchants Ice & Cold Storage Co. of San Francisco; John F. Kooistra and Walter Jones of the Carrier Corp.; W. F. Losch of the Frick Co.; and R. A. Cattell, chief engineer, H. C. Fowler and H. C. Miller, senior petroleum engineers, and Earle S. Burnett, senior mechanical engineer, of the Petroleum and Natural Gas Division of the U. S. Bureau of Mines.

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Code for Tubular Heat Exchangers

A revised tentative code for mechanical design, construction and inspection of tubular heat exchangers has been prepared by a committee of refiners and exchange manufacturers. Copies can be obtained from the secretary at 366 Madison Avenue, New York City, for 40 cents each.

Repair of Surface Casing On Rotary Drilling Wells

(Continued from Page 56)

covering with a special sleeve the perforations in the circulating joint of the cement retainer. The cement retainer and circulation joint are then run inside the fallen section of pipe and the packing rubber expanded and the slips set.

Circulating of drilling mud can then be established, the mud being forced down the inside and up the outside of the fish. When it is evident that the fallen section of pipe is free, it can be raised to its proper position and then cemented in place by squeezing cement out the bottom and around and up the outside of the pipe.

Wooden spear and slip joint for straightening broken surface pipe

A centering tool used immediately above the cement retainer will insure the proper final position of the lower section of pipe.

Use of the cement retainer for this purpose has a distinct advantage as it permits breaking of circulation around the fish. This will be necessary before an attempt is made to move the fish as it will undoubtedly be stuck. Caution should also be used in pulling on the fish as the drill string is short and therefore does not have much stretch, the loading of the derrick being almost instantaneous. If, for any reason, circulation cannot be established and the pipe can't be moved, the drill pipe and circulation joint can be backed off from the retainer and the retainer later drilled out.

The condition necessary for the pipe to fall down the hole after it has broken off can be partially prevented by using only very light pump pressure while drilling out under the surface string. If the pipe is not set on a hard formation, the pump should be operated at a speed which will merely move the cuttings out of the hole. The jetting action of the fluid stream against the walls of the hole should be avoided until at least 50 ft. has been drilled under the surface pipe. Erosion of the hole due to return mud will be negligible, most of the damage being done during the original drilling of the hole. Many operators insist that very light circulation be used at this point in the drilling.

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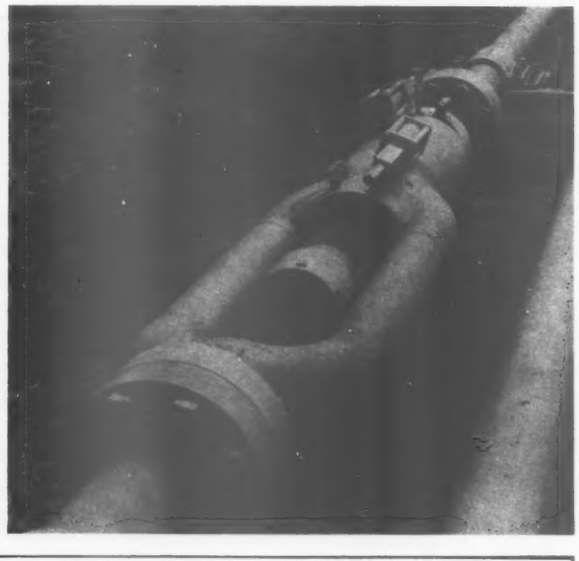
Alloy-Steel Expansion Joints

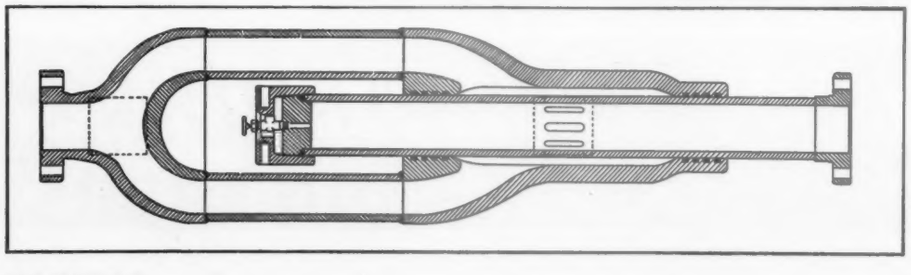
THE picture of a cast alloy-steel expansion joint and a sketch showing the interior construction are shown on this page. In such a joint expansion or contraction is taken up by movement of the pipe through the two packed sections. According to the Climax Molybdenum Co., the reasons for the use of cast manganese-molybdenum steel are three in number. First, this steel responds well to heat treatment so that awkwardness in handling these large and bulky castings does not result in distortion or weakness. Secondly, the variations in thickness in various parts of the casting do not result in structural weaknesses in using such an alloy steel. Thirdly, the use of alloy steel is economical because of the simplicity of heat treatment, the ease of machining, and the relatively few rejections because of casting defects.

The steel used in these joints, was of the following composition:

	Per cent
Carbon	0.25-0.35
Manganese	1-1.35
Phosphorus, max.	0.05
Sulfur, max.	0.05
Silicon, min.	0.30
Molybdenum	0.2-0.3

Upon normalizing at 1,725° F. and drawing at 1,225° F. the steel develops a tensile strength of 90,000-95,000 lb. per sq. in., a yield point of 55,000-60,000 lb. per sq. in., an elongation in 2 in. of 25 per cent, and a Brinell hardness of about 200.





Right: Expansion joint in which cast manganese-molybdenum steel was used. Below: Cross-section of expansion joint showing interior construction

Aluminum Cast Irons to Resist High-Temperature Oxidation

Abstract: Taken from Metals & Alloys, February 1941. "Investigation of the Properties of Heat-Resistant Aluminum Cast Iron," V. I. Smirnov and G. I. Nerovetskaya, Metallurg, Vol. 15, March 1940, pp. 13-21. In Russian Research.

ALUMINUM-ALLOY irons were prepared, using a standard-base iron, to give aluminum contents up to 24 per cent Al. The carbon content decreased with increasing aluminum percentage, and the drop was particularly sharp when the aluminum content was increased from 16 to 18 per cent. For specimens containing 15 per cent or more aluminum, the sulfur was decreased to 0.01-0.02 per cent.

Specimens of ordinary gray iron were not heat resistant at 1,500°-1,600° F. Those containing up to 5 per cent Al showed an increased resistance against oxidizing gases but they could not be considered sufficiently heat resistant from other viewpoints. Specimens containing 5-12 per cent Al were sufficiently heat resistant while those of over 12 per cent Al were highly heat resistant. With sufficient aluminum content, the addition of silicon had little effect of the heat resistance.

Resistance to bending decreased gradually up to 13-14 per cent Al and increased gradually with further addition of aluminum. The room-temperature hardness increased smoothly up to 8 per cent Al; for 8-18 per cent Al it changed sharply with a maximum at 12-13 per cent; and for over 18 per cent Al, the hardness decreased smoothly.

Specimens containing 8-18 per cent Al had the most satisfactory mechanical properties at high temperatures (up to 1,650° F.). For up to 8 per cent Al, the maximum resistance to bending was at 750°-950° F., with a sharp drop at 1,300° F. With over 18 per cent Al the resistance to bending decreased smoothly with increasing temperature. Small additions of chromium and nickel had no substantial effect.

Specimens containing 20-24 per cent Al are considered best from the point of view of general scaling resistance and mechanical properties at high temperatures.

Generous Use of Nickel-Alloy Steels in Portable Oil Rig

THE Portable Rig Co., Inc., of Houston, Tex., has made use of chromium-nickel steels in the construction of its portable oil rigs. These are described in the February 1941 issue of Nickel Steel Topics. The various services and steels that are employed are indicated in the following tabulation:

Portable Rigs—

Draw-works shaft S.A.E. X-3140 280 Brinell Hardness

Cast-steel parts .....S.A.E. 3130

Gears and transmission shafting.....S.A.E. 3120

Reverse Clutches for Rotary Engines—

Shafts and reverse gears .....S.A.E. 3140 265 Brinell Hardness

Cast pedestals, reverse housings, brake flanges, sprockets for chain drive .....S.A.E. 3130 (equivalent cast steel)

This series of steels contains 1.25 per cent nickel, and 0.60 per cent chromium, except X-3140 which contains 0.75 per cent chromium. The carbon content in hundredths of a per cent is indicated by the last two digits in the S.A.E. numbers.

Cladding of Vessels With Strips of Stainless Steel

Abstract—"Surface Cladding," George E. Gude, Jr., Steel, Vol. 107, Aug. 26, 1940, p. 44. Taken from the December issue of Metals & Alloys.

IN a new method of surface-cladding processing vessels, corrosion-resisting lining material is applied in strips 4 to 6 in. wide and 3 ft. or more long. The space between each strip permits one bead of high alloy welding rod to be laid in between, thus joining the two parallel edges and simultaneously welding both edges to the carbon-steel plate. No intermediate welding by plugs or strips is necessary, and a smooth-appearing surface with a minimum amount of welding results.

Manhole necks and large nozzles are lined similarly. Flange faces are coated with corrosion-resisting steel welding metal applied in three layers, subsequently machined. Smaller openings are lined with corrosion-resisting steel tubing, welded to the flange with a continuous bead around the periphery at the inside of the nozzle. Manhole and nozzle liners are welded to the inside lining of the vessel where the linings meet. The vessels must be stress-relieved after lining.

Ordinarily the cladding is 12 to 16-gage stabilized stainless steel. To overcome the loss of alloying elements when fusing the lining to carbon-steel plate, 25 to 12 stainless or a similar welding rod is used on 18 to 8; a rod of higher alloy content is used in welding other alloys. The rods are usually 5/32-in. diameter, and a potential of 23 to 26 v. at the arc with current of 80 to 134 amp. is used. The small rod is used to eliminate excessive heat in welding, which might result in distortion of the lining.

The carbon-steel plate is first prepared by sand blasting and all edges of the lining sheets are sheared square. Then the sheets are laid in place and tack-welded to the carbon steel. One pass of the alloy welding rod completes the joint. All joints are tested by placing a vacuum chamber over the welded portion of the lining after the application of soap suds.

Pipe-Line Activity

Socony-Vacuum Will Lay Topeka-Sioux City Line

Socony-Vacuum Oil Co., Inc., has issued specifications for a gasoline pipe line, contracts for which are to be let in the later part of this week. This project consists of a 280-mile, 6-in. line for handling refined products. The line will extend from Topeka, Kans., to Sioux City, Iowa.

Stearns-Roger Is Planning 1,500-Mile Reserve Pipe Line

DENVER, Colo.—The Stearns-Roger Manufacturing Co. of Denver announced plans today which it has been preparing for a 1,500-mile natural-gas pipe line to extend from coastal fields near Corpus Christi, Tex., to New York and other eastern cities.

The line, which the company regards as the largest ever contemplated, is to traverse 10 states. An application for construction is pending before the Federal Power Commission and a date for the hearing of objectors will be set shortly, it was reported.

The construction and operation has been proposed by the Reserve Gas Pipe Line Co. and financing of the project has been arranged with Glore, Forgan & Co. of Chicago and New York.

Out of Texas the line would pass through Louisiana, Mississippi, Alabama, Georgia, South Carolina, North Carolina, Virginia, Maryland, Pennsylvania, New Jersey, and into New York.

The application contained estimates that the area to be served by the line contains 3,500,000 users of natural gas.

The market to be served is indicated in a statement of company officials: "Approximately 75 per cent of all manufactured-gas consumers in the three states are in the area that would be served with natural-gas fuel. Applying the ratio of 75 per cent to total sales there appears to be a potential demand of more than nine billion cubic feet of natural gas monthly."

The company proposes to construct a 26-in. main transmission line. Plans call for construction of about 15 compressor stations along the line. No gas will be withdrawn from the line for consumption between the coastal fields of Texas and the area specified for final delivery.

Litigation Leads Columbia to Consider Texas-Detroit Line

WASHINGTON, D. C.—A reopening of the lengthy litigation over control of the Panhandle Eastern Pipe Line Co. and its attempt to bring Mid-Continent gas to eastern industrial cities now seems assured as a result of the action of the Supreme Court early this month permitting the Missouri-Kansas Pipe Line Co. to intervene in the consent decree proceedings now pending in the federal court in Delaware.

For more than 5 years the federal Government has been attempting to have the Columbia Gas & Electric Corp. and its subsidiary, the Columbia Oil & Gasoline Corp., divest themselves of majority control of Panhandle. Mo-Kan, the minority stockholder, maintains that the proposed consent decree is not adequate for the purpose and sought to intervene but was refused by the District Court. The proceedings will now be reopened and it is probable that Mo-Kan will ask to have the case handled by a different judge.

The Panhandle line was originally projected by Mo-Kan to serve Detroit and other industrial cities in Indiana, Ohio, and southern Michigan. The line was built to the Indiana border when Columbia, which serves this area with Appalachian gas, gained stock control of Panhandle. As a result, it is alleged, Panhandle has been denied the right to build feeder lines to the cities it proposed to serve and reaches Detroit only through a connecting line controlled by Columbia. In 1935 the Department of Justice accused Columbia of violating the Clayton Antitrust Act and obtained a consent decree under which Columbia was supposed to cease controlling Panhandle. In 1939 the department filed a second action charging that Columbia had increased its control instead of diminishing it. Columbia then filed a plan under which it proposed to make the decree effective. On January 18, 1941, the District Court approved this plan, with some modifications suggested by the Government, and the Department of Justice stated that this would satisfy the public interest and that the litigation should be terminated.

Meanwhile, however, Mo-Kan appealed to the Supreme Court for permission to intervene, alleging that in many respects the proposed decree was inadequate to terminate Columbia's control. In this it was supported by the City of Detroit, which filed a brief as amicus curiae. The Supreme Court did not pass on any of Mo-Kan's criticisms of the proposed settlement, but ordered the District Court to permit it to become a party to the proceedings. This means that the case will have to be reopened with the probability that a new consent decree or injunction will be issued which will provide for a different plan for terminating Columbia's control of Panhandle.

Officials of Mo-Kan declare that the company is ready to build additional pipe lines into cities in Indiana and Ohio and to the Detroit industrial area provided a consent decree can be worked out which frees Panhandle from the alleged Columbia control.

A. Faison Dixon, of the engineering and geological firm of Brokaw, Dixon and McKee, of New York and Houston, who is a member of the boards of both Panhandle and Mo-Kan, stated this week that in the interests of national defense it is imperative that industrial cities in this midwestern area have an adequate supply of cheap natural gas available for industrial defense purposes. "Unless Panhandle is freed from the yoke of Columbia domination," he said, "an adequate supply of gas at reasonable rates will not be available for these cities. Panhandle can and will furnish this gas if Columbia restraint is removed."

Columbia has threatened to build its own line from Texas to the Detroit area, paralleling the Panhandle line, if it is forced out of the Panhandle company. This possibility is scouted by Mo-Kan interests, however, because of the fact that the Federal Power Commission now has jurisdiction over the construction of new interstate natural-gas lines and they doubt that the F.P.C. would grant a certificate for another line while the Panhandle line is not being used to capacity.

Roger Lacy to Build Gas Line to Serve Kilgore

Southern Gas Co., headed by Roger Lacy, Longview, Tex., will construct an 8-mile, 4-in. welded gas line from the Willow Springs field to Kilgore, Tex., at an estimated cost of $90,000. The line will loop an existing 4-in. line to the Roger Lacy refinery in Kilgore, but the new line will move gas to the city of Kilgore.

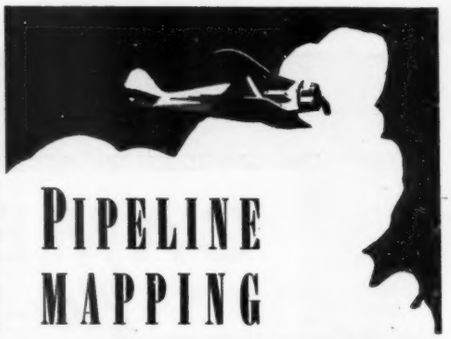
Southern Gas Co. is giving consideration to a project to build a gas line from Willow Springs to Dallas, Tex.

Eastern Pipe-Line Runs Declined in February

Largely in reflection of smaller production in Illinois, deliveries of crude oil in eastern pipe lines, formerly in the Standard Oil group, during February were smaller than in January, last, and February 1940.

In the accompanying tabulation are shown deliveries by the nine lines for February and the first 2 months of this year with comparisons for similar periods in 1940, in thousands of barrels, together with daily averages:

	February		2 months	
	1941	1940	1941	1940
Buckeye	5,981	5,328	13,026	10,542
Eureka	630	749	1,416	1,605
Illinois	4,525	6,450	10,027	12,380
Indiana	1,705	1,625	3,593	2,941
Natl. Transit	1,454	1,419	2,931	2,729
N. Y. Transit	739	518	1,529	1,020
Northern	876	644	1,899	1,075
Southern	359	371	676	736
S. W. Penna	856	993	1,972	2,162
Total	17,125	18,097	37,069	35,190
Daily average	612	624	628	587



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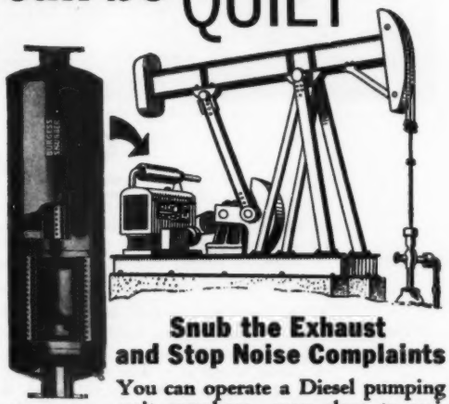

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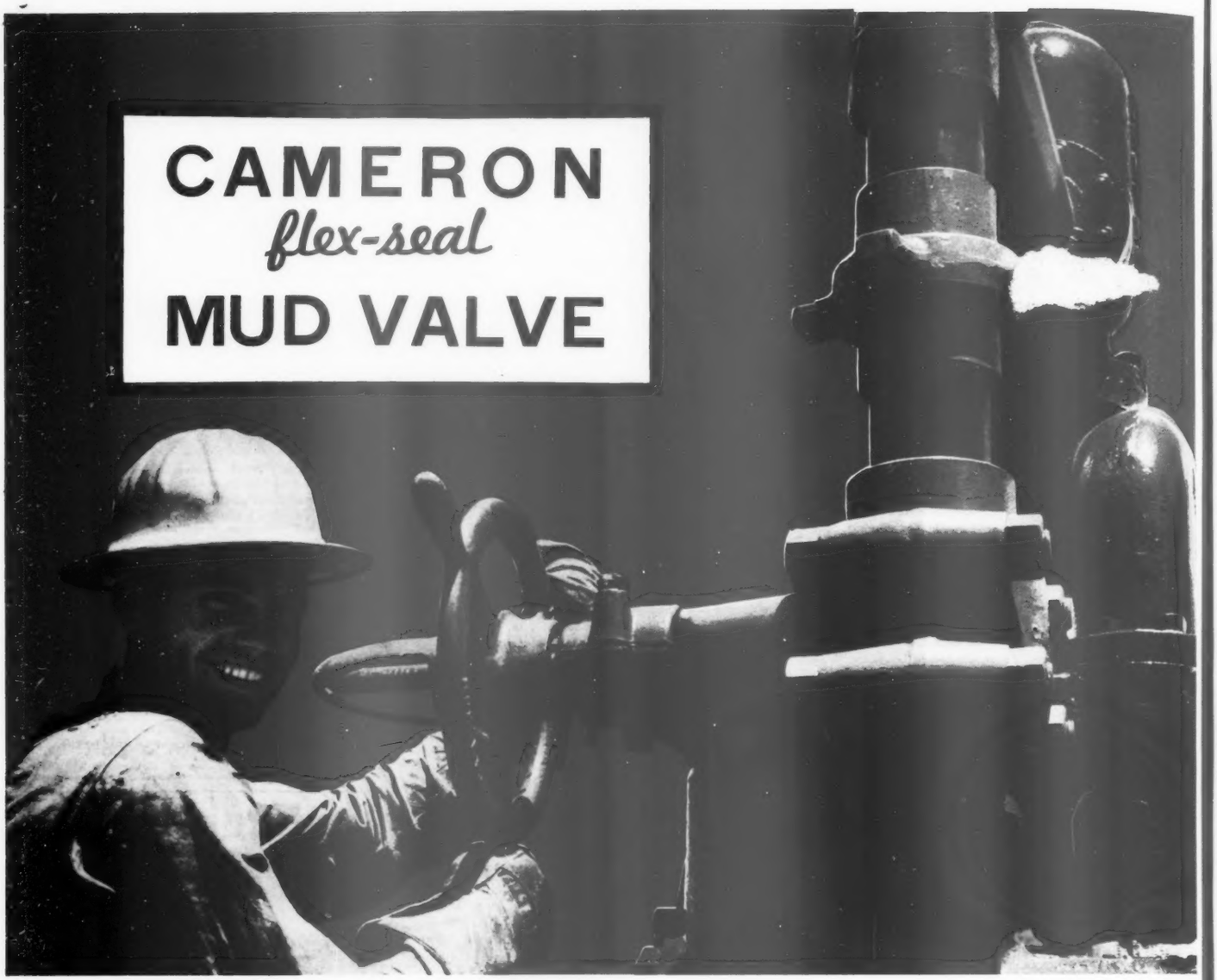

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Completions fell sharply during the week from 470 to 420 wells. This drop embraced all types, oil wells being down 21, gas wells 11 and dry holes 18. It is probable that there is no significance in the decline, except, possibly that spring mud is deep in some areas that would otherwise be active.

If actual drilling is off, the reserves uncovered by that drilling are much greater than during the first part of 1940. New pools are being reported, many of which are of considerable significance. The Nebraska lease play, which is discussed elsewhere in this issue will receive added impetus following the final gaging of an Arbuckle pumper in the Penokee district of Kansas. The deep Ordovician play in West Texas continually assumes greater importance as new tests come in and already major fields are in prospect in the deeper pays. Arkansas' Smackover lime pay is found not to be limited by state lines and is picked up in Lisbon. The Wilcox trend play in Louisiana is producing results and the shallower Sparta sand is also showing production.

Producers of heavy crude are coming more into their own as both California and Wyoming prices have risen. When gasoline storage depresses the market, these heavy fuels with little gasoline yield come into greater favor. In the meantime increasing industrial uses for gas have greatly increased the search for that commodity especially in the older producing areas.

LOUISIANA GULF COAST: A new sand has been discovered in West Bay, Plaquemines Parish, about 1,000 ft. above the discovery sand. Two wildcats in the same parish are reported to be showing oil, and a deep test on the southeast flank of the Edgerly dome is being tested. Other deep tests on old salt domes are showing favorable prospects (p. 90).

WYOMING: Following a year of activity in which production has more than doubled, Oregon Basin operators are receiving a 5-cent increase on that field's heavy crude (p. 84).

INDIANA: The test ½ mile south of the Michigan State line which was reported as a Traverse producer has declined from 150 bbl. to 10 bbl. as water broke in (p. 72).

TEXAS GULF COAST: A wildcat in the Double Gum area, Liberty County, is preparing to test two sands found below 8,000 ft. Another offshore field is in prospect off Sabine Pass, Jefferson County, and a Silsbee field outpost flowed from the Cockfield on a drill-stem test. The latter well may be deepened to the Wilcox before being completed (p. 91).

EASTERN KENTUCKY: Drilling for gas in this area strikes a new high as Kentucky-West Virginia Gas Co. plans drilling 90 wells before the end of the year (p. 72).

SOUTHWEST TEXAS: A test south of Refugio is showing oil. If successful it will revive wildcatting along this sector of the Frio trend. Drilling for deep production around the east flank of the Stratton Agua Dulce fields gathers momentum as 19 wells are under way. A depth record for the Rio Grande district is established by a Cameron County well which is drilling below 10,800 ft. (p. 79).

KANSAS: Farthest west production on the Barton arch was established when the Penokee pool opener in Graham County was established as a 216-bbl. pumper in the Arbuckle. Four pools were extended during the week, Kraft, Trapp, Gorham and Hall-Gurney (p. 94).

ILLINOIS: Hopes for St. Peter production in the basin are again dashed by failure of Texas Co.'s deep Salem test to produce in this horizon. The well extended Trenton production 2 miles south of present production. A new pool was opened in White County with prospects of a second (p. 74).

CALIFORNIA: A 5-cent increase for heavy crude in the San Joaquin Valley is expected to return many shutdown wells to production, and will also spur wildcatting in the heavy crude district. The successful Inglewood deep test will probably open up an active drilling campaign to the Sentous zone. Ventura Avenue has the largest completion in many months, a 3,500-bbl. 10,000 footer (p. 82).

NORTH LOUISIANA: The state's first Smackover lime producer gaged 303 bbl. of distillate with 4,150,000 cu. ft. of gas. This may lead to considerable activity as the formation is responsible for most of Arkansas' current flush production. A Wilcox sand producer northwest of the Summerville gas field opens up a new area in La Salle Parish. Other Wilcox tests report favorable showings and one well has reported showings in the Sparta sand as well (p. 96).

WEST TEXAS: One of the most important steps in determining the trend of the new deep, Lower Paleozoic oil production in the southern part of the basin was made the past week when a new Ellenburger lime discovery was recorded between the Sand Hills Permian field in Crane County and the Abell field in northern Pecos County. The wildcat discovery is in southern Crane County and will be tested this week (p. 87).

WEST CENTRAL TEXAS: Final outcome was known during the week at indicated discovery wells throughout Fisher and Jones counties. Two Fisher County wildcats and one Jones County wildcat were on the producing list, while in Jones County an indicated discovery was quit as a failure. New wildcat locations were made in Brown, Stonewall and Coleman counties (p. 76).

NORTH TEXAS: A possible discovery was being hailed in Clay County as oil was recovered from a saturated section in the Mississippian lime. In Jack and Archer counties discoveries of several weeks ago were officially gaged (p. 76).

EASTERN TEXAS: The development pace at Hawkins in Wood County was on the upturn with three townsite tests nearing the Woodbine pay. Permits were granted for other wells which will be started in a short time. The deep Willow Springs gas field in Gregg County is scheduled for new development as two outpost tests are starting and plans are working for two new pipe-line outlets (p. 98).

OKLAHOMA: As the new Guthrie pool discovery gaged 2,169 bbl., interest swung back to the state's livest county, Okfuskee, where either a new pool or a 1-mile-east extension to Droppleman was opened in the Hunton (p. 70).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended March 15, 1941)

	Oil	Gas	Dry	Total	1941 total comp. to date	1940 total comp. to date
N. Y., Pa., and W. Va.	51	19	4	74	855	751
Ohio	5	11	7	23	272	171
Indiana	4	0	1	5	74	59
Kentucky	0	1	1	2	102	73
Illinois	43	0	17	60	574	662
Michigan	1	0	5	6	167	251
Kansas	23	1	3	27	317	266
Oklahoma	8	3	5	16	269	318
Nebraska	0	0	1	1	17	0
Texas:						
North Central Texas	25	1	13	39	498	615
West Texas	39	0	5	44	373	410
Texas Panhandle	6	1	1	8	97	118
Eastern Texas	4	1	0	5	213	162
Texas Gulf Coast	17	1	5	23	202	255
Southwest Texas	22	2	6	30	301	433
Total Texas	113	6	30	149	1,684	1,993
North Louisiana	11	1	1	13	123	119
Louisiana Gulf Coast	12	1	5	18	164	143
Total Louisiana	23	2	6	31	287	262
Arkansas	1	0	0	1	32	43
Mississippi	2	0	2	4	34	16
Montana	0	2	0	2	51	26
Wyoming	2	0	1	3	29	31
Colorado	0	0	1	1	6	5
New Mexico	4	1	0	5	63	128
California	6	0	4	10	211	204
Total United States	286	46	88	420	5,044	5,259
Total previous week	307	57	106	470		
Week ended Mar. 16, 1940	337	46	117	500		

By
ROBERT INGRAM

Wildcat East of Droppleman Opens New Pool in Hunton

SUNRAY OIL CO. took a gage of its discovery well at Guthrie pool this week, and announced the well had flowed 2,160 bbl. of oil in 24 hours through tubing. The well was put on production and development of the pool got under way at once. Two 10-acre locations for offsets to the Sunray 1 Donoghue, discovery well in NW SE 7-17-1w, were announced. They were Sinclair Prairie 1 Ezra Sult, SW SW NE 7-17-1w, and Continental 1 Donoghue, NE NE SW 7-17-1w.

Meantime, attention swung back to Okfuskee County where a large part of the state's wildcatting has been centered for the past several months. Portable Drilling and K. G. F. F. Oil Co. found production at 1 Camp, SW SW SW 6-11-9, and apparently had opened either an important new pool or an important extension to the Dill pool 1 mile west. No gage had been taken at week's end, but estimates of the initial production ran from 500 to 1,000 bbl. a day.

Oil spewed across the pits from the gate valve barely cracked open and showed for a large volume with an estimated 5,000,000 cu. ft. of gas a day. When the plug was first drilled early in the week, gas was estimated even higher.

Production came from the Hunton lime found at 3,915-90 ft. The well was drilled to 4,008 ft. in the Sylvan shale and pipe was set and perforated with 41 shots at 3,950-60 ft. When tanks have been built, the operators are expected to acidize the lime zone and perhaps perforate the pipe again.

While most of the production from the north extension to the Dill pool, usually referred to as the Droppleman pool, has come from the Cromwell at about 3,450 ft., the Cromwell found by 1 Camp at 3,410 ft. was an unconformity and was passed up. Both the Hunton and Sylvan zones have also been productive at Dill, however.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Dill	1	177	3,718
St. Louis	1	460	4,294
Other fields	5	397	18,121
Wildcats	1	25	4,326
Gas wells: Lovell	2	*7	9,775
Other fields	1	*5.5	2,065
Dry holes: St. Louis	1	.....	4,116
Other fields	1	.....	1,628
Wildcats	3	.....	11,818
Total	16	.....	59,861
Recompletions	2	61	.....

*Million cu. ft.

Entire Area Being Tested

The area has been one of the most active in the state ever singe John Droppleman and Wewoka Standard Oil Co. completed 1 Gahagan, NE NE NE 3-11-8, in May 1940 and extended the then 5-year-old Dill pool ½ mile northwestward. Production has been pushed steadily to the north, and 6 weeks ago the state Corporation Commission extended its spacing orders to include all of Sections 26 and 27-12-8, in the Droppleman pool.

Previously some 32 wells had been drilled in Sections 34 and W½ 35, and 6 wells and a dry hole in N½ 3-11-8. Dry holes apparently limit the east and west ends of the pool, but so far the north limits are as yet undefined. Some of the wells have been completed for initial daily yields of as high as 3,000 bbl.

Wildcatters have been searching for production in all directions from Dill in recent months and at the present time J. O. Hayes et al are drilling 1 McKernan, E½ SE NW 25-12-8, about a mile northeast, and J. F. Root and Forrest Anderson have made location for 1 Parks, NW NW SE 30-12-8, about 3 miles west. The Hayes 1 McKernan has been shut down for about 2 months at 4,068 ft. in Hunton lime topped at 4,062 ft. Casing was set at 4,064 ft., and when the plug was drilled there was a show of water. Work was resumed this week. The 1 Parks is located on a block of 800 acres and is to be a Wilcox test.

AVERAGE DAILY PRODUCTION

LEADING OKLAHOMA FIELDS

	Mar. 15	Mar. 8
Allen	4,650	4,650
Billings	6,250	6,250
Burbank	7,375	7,350
South Burbank	7,475	7,450
Balance Osage	16,975	16,500
Blackwell district	3,550	3,500
Bristow-Slick	6,425	6,375
Chandler	1,000	975
Crescent	2,025	2,025
East Cromwell	2,575	2,625
Cromwell	3,050	2,975
Cumberland	5,250	4,425
Cushing-Shamrock	9,025	8,950
Dill	5,225	5,300
Duncan	3,650	3,650
Edmond	3,550	3,500
Fish	2,725	2,750
Fitts	13,100	12,600
Jesse	1,900	1,875
Graham-Fox	2,200	2,200
Healdton	8,675	8,600
Hewitt	8,150	8,125
Keokuk	2,925	2,925
Konawa	1,050	1,075
Lucien	5,675	5,650
Moore	975	975
Northeastern counties	17,300	16,750
Oklahoma City	83,225	95,050
Olympic	1,775	1,775
Ramsey	3,525	3,350
Sasakwa	1,350	1,350
Sholem-Alechem	2,675	2,600
Seminole district:		
Bowlegs	6,250	6,225
Carr City	2,200	2,175
Dora	1,375	1,450
Earlsboro	3,950	3,950
East Earlsboro	1,725	1,725
South Earlsboro	475	500
Little River	6,350	6,425
East Little River	675	650
Mission	1,275	1,275
Seminole	6,450	6,475
East Seminole	1,075	1,100
Searight	1,775	1,825
Total Seminole	33,575	33,775
St. Louis-Pearson	20,250	20,250
Tatums-Tussy	5,550	5,250
Tonkawa-Garber-Thomas	3,575	3,500
Wewoka	1,750	1,625
Yale-Jennings	3,275	3,200
Total Oklahoma	398,675	402,850

Oklahoma County Test Is Dry

A flurry of excitement developed during the week when Clyde Dorr et al 1 Riley, NE NE SE 34-13-1e, a wildcat in Oklahoma County, was found running high. However, the well was shut down at week's end after pulling a core of white Wilcox sand from 5,812-21 ft. Operators were expected to plug back to test the Chicken Farm and Cleveland zones. The Cleveland is productive in the Jones pool a mile northwest.

Meantime, Skelly Oil Co. was still trying to make an oil producer at 5 Edmundson, in N½ NW NW 23-5-8, in the northwestern part of the Chickasha gas field of Grady County. Through casing perforations at 4,930-5,300 ft., the well averaged 60 bbl. of fluid a day, showing some mud and drilling water. The oil tested 24° gravity. After setting the mechanical plug, the pipe was perforated with 80 shots at 4,500-40 ft. and was showing 60 to 70 bbl. of fluid, cut 25 per cent.

And at Oklahoma City, while debate over the merits of a proposed secondary recovery plan requring state legislation was getting under way, seven new wells were drilling in various parts of the field.

OKLAHOMA COMPLETIONS

Carter County

Healdton pool: Sun 2 Apple-Franklin, NE NE SE 8-4s-3w, old well drilled deeper from 1,072 ft. to 1,412 ft., Arbuckle 1,390 ft., dry.

Creek County

East Tuskegee pool: Bruin 1 Morton, NW SE 27-14-10, old well drilled deeper from 2,700 ft. to 3,336 ft., Viola 3,268 ft., 5-in. 3,270 ft., Wilcox 3,312 ft., shot 3,311-36 ft., swabbed 50 bbl. oil and 3 bbl. water. Dunn 2 Anthis, NE NW SE 34-14-10, pumped 45 bbl., 5-in. 3,260 ft., Wilcox 3,283 ft., T.D. 3,301 ft., P.B. 3,298 ft., shot 3,286-98 ft.

Wildcat: Link 1 Kinch, NE SW NE 25-16-7, dry, T.D. 3,839 ft., trace Misener 3,715 ft., Wilcox 3,821-39 ft., water.

Garfield County

Enid pool: Champlin 1 Randolph, W½ SW NE 23-23-6w, pumped 45 bbl., Chester 6,052 ft., 9-in. 6,056 ft., T.D. 6,316 ft., acid.

Champlin 1 Turner, E½ NE SW 23-23-6w, location abandoned.

Garvin County

Tussy pool: Cox-Hamon 4 Craig, NE NE NW 32-1-3w, pumped 45 bbl., T.D. 2,575 ft., 7-in. 2,245 ft., P.B. 2,500 ft., 2-in. 2,482 ft.

Jackson County

Altus pool: Henry 3 Minor, SE NW NW 15-1-20w, temporarily abandoned, T.D. 1,628 ft., 7-in. 1,407 ft.

Jefferson County

Wildcat: King 1 Pealor, E½ NE NW 33-7s-6w, dry, T.D. 4,613 ft., Ellenburger 4,438-4,613 ft.

Lincoln County

West Davenport pool: Elko 1 Kalka, SE SE NW 5-14-5, flowed 57 bbl. oil and 12 bbl. water pinched, Prue 3,535-40 ft., 7-in. 3,525 ft., T.D. 3,549 ft., P.B. 3,545 ft., shot 3,535-45 ft.

Logan County

Lovell pool: Kerlyn 1 Moore, SE NE 33-18-4w, 6,000,000 cu. ft. gas, Lovell 4,057 ft., perf. 4,073-77 ft. and 4,101-02 ft., T.D. 4,903 ft., 7-in. 4,855 ft., Layton 4,865-79 ft.

H-P Gas 3 Matheson, NE SW 34-18-4w, 7-in. 4,745 ft., T.D. 4,872 ft., Layton 4,823-72 ft., 1,000,000 cu. ft. gas.

Noble County

Polo pool: Stanolind 6 De Bord-B, SE NW SW 27-22-2w, old well P.B. from 4,734 ft., perf. 3,750-70 ft., pumped 11 bbl. oil, rip in Layton 3,750-95 ft.

Okfuskee County

Cromwell pool: Graph 1 Lewis, NW NE 14-10-8, location abandoned.

Dill pool: C. L. McMahon 1 Williams and Edwards, SE SE SE 27-12-8, flowed 177 bbl. cut 2 per cent, Cromwell 3,666 ft., 5-in. 3,665 ft., T.D. 3,718 ft., shot 3,678-98 ft.

Wildcat: Burke-Greis 1 Mullins, SW SE SE 5-10-10, dry, T.D. 3,366 ft., Cromwell 3,344 ft., shot 3,078-98 ft., est. 225,000 cu. ft. gas.

Pittsburg County

Quinton gas field: Utilities 3 Bascomb, NE SE 10-7-18e, 5,500,000 cu. ft. gas, 8-in. 1,426 ft., sand 1,848-2,042 ft., T.D. 2,065 ft., shot 1,853-2,040 ft.

Pottawatomie County

St. Louis district: H. Phillips 3 Cherry, SE NW SW 21-7-4, swabbed 460 bbl. oil, 460 bbl. water, Viola 4,034 ft., Wilcox 4,292 ft., 7-in. 4,292 ft., T.D. 4,294 ft.

Paul Traugh et al 1 McCook, SW NE SE 5-7-4, dry, T.D. 4,116 ft., Woodford 3,871 ft., cored sandy shale 3,878-89 ft., show oil, Hunton 3,985 ft.

Seminole County

West Little River: Newsom 1 Smith-B, NW SE NE 20-7-6, flowed 205 bbl., Calvin 2,336 ft., 7-in. 2,342 ft., T.D. 2,380 ft.

Wildcat: Alma 1 Borden, NE SE NW 4-8-8, flowed 25 bbl. oil, 15 bbl. water, T.D. 4,326 ft., P.B., perf. Cromwell 3,310-46 ft.

OKLAHOMA DRILLING REPORT

Creek County

Ray Starr 1-A Lumm ..... SE NW SE 8-14-8
T.D. 2,851 ft., P.B. 2,470 ft., to test Prue sand.

Jackson 1 Hannah Prince ..... SE SE NE 26-19-9
Drilling 300 ft.

Bryan Pet. 1 Corbray ..... NE NE NW 34-19-9
8-in. 1,519 ft., drilling 1,810 ft.

Jackson County

Mutual 1 Caves ..... E½ NW NW 36-4-21w
Drilling 1,220 ft.

Kiowa County

Artie Baker 1 Coakley ..... NW NE SE 20-7-17w
T.D. 1,287 ft., granite wash, P.B. 1,235 ft., acid, testing est. 10 to 15 bbl.

Lincoln County

Helmerich & Payne 1 Hennessey NW NW SW 23-16-3
First report.

Logan County

Kerlyn 1 Wareing ..... SW NE SW 33-19-4w
T.D. 220 ft., 10-in. 212 ft.

Noble County

Adams 1 Albright ..... SW SW SE 31-23-2w
Drilling 1,300 ft.

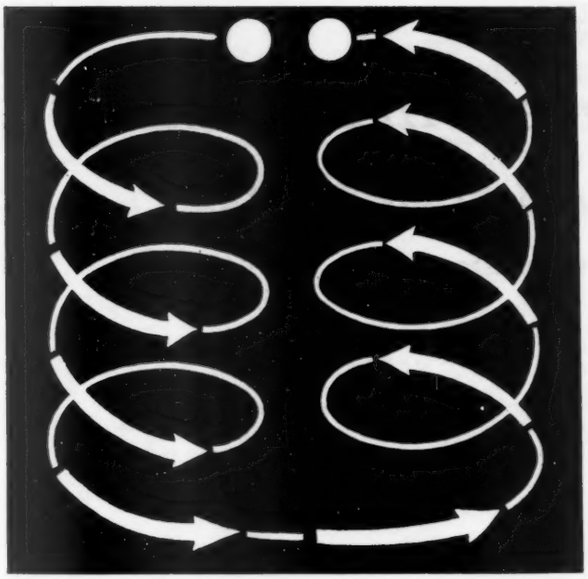
J. E. Crosbie et al 1 Hogle ..... SE SE SW 29-20-2
First report.

Okfuskee County

Alma et al 1 Replogle ..... NW SW NW 14-11-10
10-in. 56 ft.

K. G. F. F. 1 Camp ..... SW SW SW 6-11-9

(Continued on Page 86)



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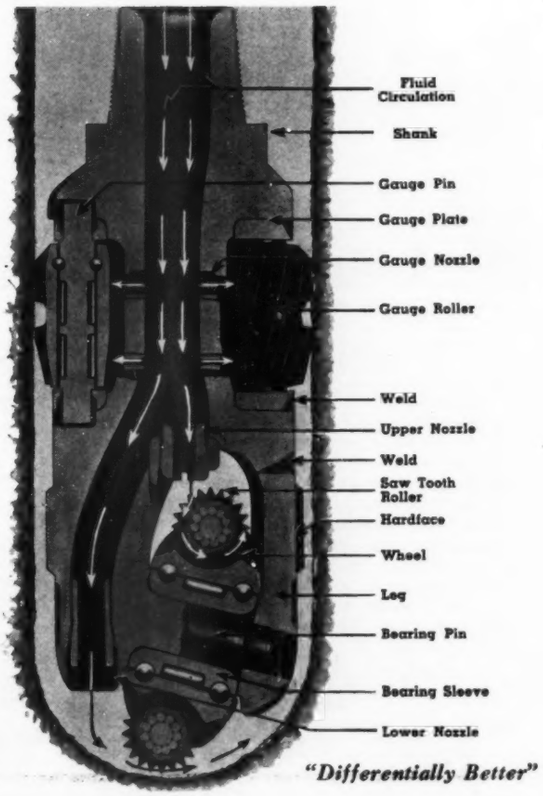

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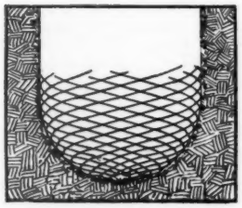

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Gas Development in Eastern Kentucky Heads For Peak

By STAFF CORRESPONDENT

EVANSVILLE, Ind., Mar. 17.—An Elkhart County wildcat may soon start a drilling play which will involve both Indiana and Michigan. A. W. Downs 1 Harmon, NE NE SE 11-38n-4e, which 2 weeks ago developed commercial oil production from the Traverse lime at 650 ft., was reported pumping at the rate of 10 bbl. oil and 150 bbl. water at the end of the week. In an earlier test, the well pumped 150 bbl. oil in 12 hours and then went to water. The 1 Harmon is approximately ½ mile south of the Indiana-Michigan line and about the same distance from Tamblyn Development Co. 1 Woolverton, a Traverse discovery pumper completed several months ago in SE NE NE 22-8s-15w. Two wells have been drilled in the area northeast of the discovery well but neither was productive. The discovery itself has been inactive during the past few months.

McCummings et al 1 Ritter, a Posey County wildcat in SW SW SE 9-8s-14w, last week had a show of oil in the Aux Vases at 2,572-76 ft. However, saturation was not considered satisfactory and the well will be deepened to the McClosky. Meanwhile, production continued to improve at Holemans et al 1 Oeth, another Posey County wildcat. Holemans has been having considerable difficulty in attempting to shut off water in the McClosky. However, after being plugged back and perforating at 2,929-35 ft. last week, the well was reported pumping at the rate of 80 bbl. oil and 20 bbl. water a day, the best production figures yet reported for the well.

SUMMARY OF COMPLETIONS

Indiana

Oil wells	4	262	10,496
Dry holes	1		675
Total	5		11,171

Ohio

	No.	Bbl.	Footage
Oil wells	5	604	14,220
Gas wells	11	*5.0	23,544
Dry holes	7		15,131
Total	23		52,895
Recompletions	2		

Eastern Kentucky

	No.	Bbl.	Footage
Gas wells	1	*0.3	2,910

Western Kentucky

	No.	Bbl.	Footage
Dry holes	1		1,045
Recompletions	1		
Pressure wells	1		1,264

*Million cu. ft.

INDIANA COMPLETIONS

Gibson County

South Griffin pool: Continental 30 Bozeman, SE SE NW 23-3s-14w, pumped 60 bbl. naturally, reamed removable pipe 2,055-95 ft., 2,534-49 ft., 2,654-64 ft., T.D. 2,830 ft.
Continental 15 Keck, SE SE NE 27-3s-14w, pumped 115 bbl. naturally, reamed 2,066-79 ft., 2,774-93 ft., T.D. 3,220 ft., P.B. 3,087 ft.
Continental 17 Keck, SE NE SE 27-3s-14w, pumped 75 bbl., pay 2,866-68 ft., T.D. 2,910 ft., P.B. 2,867 ft.
Wildcat: Oleum Pet. Co. 1 Bank, SE SE NW 5-2s-8w, pumped 12 bbl., 40-qt. shot 1,188-93 ft., T.D. 1,536 ft., P.B. 1,196 ft.

Pike County

Wildcat: Norris et al 1 Doabes, SE NE SW 19-1n-6w, location abandoned.

Spencer County

Wildcat: H. M. Hunt et al 1 Spain, E½ SE SW 32-7s-6w, dry, sand 644-75 ft., H.F.W., T.D. 675 ft.

INDIANA DRILLING REPORT

Crawford County

J. C. Barnett 1 Baylor ..... SE SE SW 22-1s-2e
Set 4-in. 928 ft., drilling 1,325 ft.

Reece-Dietz et al 1 Esarey .....NE NW NE 36-3s-1w
Drilling 240 ft.

Elkhart County

A. W. Downs 1 Harmon ..... NE NE SE 11-38n-4e
T.D. 650½ ft., pumped 10 bbl. oil and 150 bbl. water in 24 hr., testing.

Gibson County

Turbegoille et al 1 Heston .....NE NE SE 8-3s-13w
Set 10-in. 152 ft., drilling 1,160 ft.
Pet. Exploration 1 Coolidge .....SW SE 17-1s-11w
Spud.
Hyslop et al 1 fee .....NW NE NW 20-1s-9w
T.D. 1,674 ft., pumped 6 bbl., naturally, may acidize.

Greene County

Midwest et al 1 Good .....W½ NE NW 21-6n-7w
Rigging up standard tools.

Knox County

Johnson O. & G. 1 Met. Life....NW NW NE 11-1n-11w
Glen Dean 1,498 ft., Hardinsburg 1,529 ft., water, drilling 1,545 ft.
Naomi Oil 1 Walden .....NE NE NE 10-5n-10w
Set 10-in. 101 ft., drilling 200 ft.
C. M. Lane et al 1 Morgan.....SW SE SW 32-2n-9w
Set 10-in. 130 ft., drilling 199 ft.

Monroe County

Terry Deskins 1 Thompson ... NE NW SE 18-9n-1e
Devonian 744 ft., show gas, drilling 776 ft.
Terry Deskins 1 Kinser ..... SW SW NW 34-7n-1e
Show gas 345-50 ft., drilling 515 ft.

Newton County

A. C. Thomas 1 Henekle ..... SE SE SE 36-30n-9w
S.D. 195 ft.

Orange County

United States Oil 1 G. E. Willyard NW NE SW 33-1n-1w
Drilling 560 ft.

Perry County

H. E. Pollock 1 J. F. Heck.....SE SE SE 16-7s-3w
Underreaming 8-in. casing.

Pike County

P. W. Harr et al 1 Burnett... SW NW NE 26-2s-8w
Salem 1,755 ft., S.D. 1,880 ft.

Posey County

McCummings et al 1 Ritter ..... SW SW SE 9-8s-14w
T.D. 2,645 ft., Aux Vases 2,570 ft., show oil 2,572-76 ft., will deepen to McClosky.
Cherry & Kidd et al 1 Packet Realty.....
.....NW NE NW 2-4s-14w
Glen Dean 2,320 ft., Barlow 2,546-52 ft., Aux Vases 2,848-80 ft., stained tight sand, D.S. test, no results, to run casing at 2,836 ft.
Ed Holemans et al 1 Oeth.....NE SE NE 6-4s-13w
T.D. 2,981 ft., P.B. and perf. 2,929-35 ft., pumped 80 bbl. oil and 20 bbl. water a day.
Holemans 1 Mumford .....SE NW NE 6-4s-13w
T.D. 2,931 ft., P.B. 2,200 ft., perf. 1,898-1,906 ft., pumped 409 bbl., 17 per cent water, now pumping 250 bbl. a day.
Hollandsworth 1 Crumm .....NW NW SW 5-4s-13w
Show oil 1,900-06 ft., Menard 1,930 ft., Glen Dean 2,266 ft., Barlow 2,482-94 ft., S.D. 2,595 ft.

Spencer County

J. B. Miller et al 1 Dooley.....NW NE NW 19-7s-7w
Running 10-in. asing.

Sullivan County

T. H. Drake 1 Curry .....NE SW 11-9n-8w
Spuded.
W. J. Reynolds 1 Hyde.....SW NE NE 9-8n-10w
Spudded.
W. J. Reynolds 1 Poe .....NE NE SW 3-8n-10w
T.D. 1,477 ft., Salem 1,430 ft., pumping water.
Trio Drlg. 1 Eaton .....NW NW 2-7n-9w
Drilling 735 ft.

Vanderburg County

Harvey Simms et al 1 Hell....NW NW SW 6-7s-11w
Tar Springs 1,801 ft., show oil 1,801-15 ft., 20-qt. shot 1,807-20 ft., 200 ft. oil, T.D. 1,820 ft., leaning out.

Vigo County

Sage & Farley 1 Campbell....S½ NE NW 24-11n-8w
Drilling 1,885 ft.

OHIO FIELDS

NEWARK, Ohio, Mar. 17.—The outstanding development of the week comes from the Clayton pool in Perry County. Three Clinton sand oil producers were completed, the best one flowed 275 bbl. the first 24 hours after shot, the others yielded 178 bbl. and 78 bbl. respectively. Out of eight gas wells, Stark County had only one gaging better than 1,000,000 cu. ft. open flow. Five dry holes make up the balance of the completions. There was no important change in the status of the deep tests drilling in the state.

Ohio 1 Jay Childs in Springfield Township, Erie County, Pennsylvania, is down to 4,948 ft., 511 ft. in the Trenton lime with no further shows of the light green oil found near the top of that section.

Athens County

Bern Township: Bern O. & G. Co. 1 Frieda Rebrasier, Sec. 18, 600,000 cu. ft. gas, Maxon, T.D. 1,109 ft.
Carthage Township: C. W. Nuzum 1 Carrie Willett, Sec. 16, 500,000 cu. ft. gas, Keener, T.D. 1,281 ft., drilled deeper from Salt sand at 1,042 ft.
Snyder et al 3 J. I. Gaston, Sec. 23, 40,000 cu. ft. gas, Salt sand, T.D. 1,035 ft.

Guernsey County

Center Township: McCullough 1 Alonzo Steel, Lot 7, dry, Berea, T.D. 1,331 ft.

Knox County

Union Township: Brooks Johnson 1 Sarah Miller, Danville corporation, 930,000 cu. ft. gas, Clinton, shot, T.D. 2,885 ft.

Licking County

Mary Ann Township: C. A. Davis 2 F. N. Wilkin, Sec. 15, 480,000 cu. ft. gas, Clinton, T.D. 2,599 ft.
Newton Township: Penick et al 3 Levi Lynn, NE fourth quarter, 880,000 cu. ft. gas, Newburg, shot, T.D. 2,210 ft.

Lorain County

Penfield Township: Wm. Dempsey 1 J. W. McHenry, Lot 105, Sec. 6, dry, Clinton, T.D. 2,527 ft.

Meigs County

Sutton Township: Pure Oil Co. 1 J. C. Hamm, Sec. 26, 70,000 cu. ft. gas, Ohio shales, shot, T.D. 3,265 ft., drilled deeper from Berea.
Rutland Township: T. W. Bengel 1 John Groff, Sec. 32, 360,000 cu. ft. gas, second Cow Run, T.D. 655 ft.

Muskingum County

Brush Creek Township: Gas Prod. Co. 1 E. R. Meyer, Sec. 15, dry, Clinton and Medina, T.D. 4,208 ft.
Wayne Township: Wittmer Co. 2 John J. Frick, Sec. 4, 600,000 cu. ft. gas, Clinton, shot, T.D. 3,780 ft.

Noble County

Marion Township: Marion O. & G. Co. 1 R. D. Franklin, Sec. 11, dry, Berea, T.D. 1,727 ft.
Jackson Township: S. L. Skinner et al 1 Orvil Haga, SE Sec. 3, 3-bbl. pumper, Macksburg 800-ft. sand, T.D. 973 ft.

Perry County

Clayton Township: Preston Oil Co. 1 Wm. Thompson, Sec. 8, flowed 275 bbl., Clinton, shot, T.D. 3,194 ft.
Preston 1 J. H. Cookson, Sec. 8, flowed 178 bbl., Clinton, shot, T.D. 3,323 ft.
L. L. Dittoe et al 6 C. A. Beacham, Sec. 17, 78 bbl., Clinton, shot, T.D. 3,360 ft.
B. G. Davis et al 6 Mrs. C. A. Beacham, NW Sec. 16, 70 bbl. and 100,000 cu. ft. gas, Clinton sand, T.D. 3,370 ft.
Monroe Township: H. L. Altier & Sons 11 Sarah Gladden, SE Sec. 3, 150,000 cu. ft. gas, Berea, T.D. 1,088 ft.
C. Z. Ruth 25 N. L. and C. M. Rodgers, NW Sec. 27, dry, Berea, T.D. 1,176 ft.
Preston 1 Faye Boring, SE Sec. 21, dry, Clinton sand, T.D. 2,785 ft.

Stark County

Plain Township: East Ohio 2 M. C. Greer, Sec. 22, 1,020,000 cu. ft. gas, Clinton, shot, T.D. 4,681 ft.

Washington County

Barlow Township: Schramm Bros. 12 W. A. Christopher, Sec. 1, 25,000 cu. ft. gas, Maxon, plugged, T.D. 1,377 ft.

EASTERN KENTUCKY OPERATIONS

ASHLAND, Ky., Mar. 17.—A program calling for 90 gas wells and the expenditure of over $1,500,000 in the drilling activities is planned by the Kentucky-West Virginia Gas Co. P. C. Van Gilst, vice president in charge of operations, in confirming the expansion program explained that the work would be completed before the end of the year and additional construction of facilities will call for further expenditures.

The Kentucky-West Virginia company recently announced that it was making a survey for possible construction of a 200-mile pipe line from Floyd County to northern West Virginia. Definite word of this project is expected by the end of this month.

The company at present has approximately 700 wells in the Big Sandy region (eastern Kentucky) with the new drilling program calling for wells in Floyd, Pike and Knott counties.

It is understood that the company may construct a large compressor station at Dwale in Floyd County but no definite action has been taken on this project.

Commenting on a report by D. J. Jones, state geologist, that the Oriskany sand in West Virginia, Pennsylvania and New York were showing definite signs of weakness, Mr. Van Gilst said he believed the decline was a temporary one due to a lack of development. He added, however, that the company was proceeding with large-scale developments in eastern Kentucky since the section "afforded an excellent supply" and the sources could be tapped more easily than those in West Virginia.

Completion of one gas well marks the weekly report of operations in this part of the state. Reports of new locations also share the spotlight while other activities continue on the same general level. The locations point to definite drilling expansion.

The Kentucky-West Virginia company reports locations for three wells with rigging up under way at 612

(Continued on Page 79)

Highlights on Nation's Electric Power Supply

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By
STAFF CORRESPONDENT

Deep Test at Salem Condemns St. Peter But Extends Trenton

MATTOON, Ill., Mar. 17.—Oil production from the St. Peter sandstone has long been the hope of many Illinois operators. The approximate correlation of the St. Peter with the highly productive Wilcox sand of Oklahoma and Kansas has led many to believe that it has very favorable production possibilities in Illinois. Its high porosity and permeability would make it an excellent reservoir rock if it should contain oil. Until recently, however, no tests of this formation were made in the deeper parts of the basin. A large number of shallow tests and a few deep tests have been drilled in other parts of the state but, as yet, no well authenticated shows of oil have been reported from the St. Peter.

Several weeks ago the Texas Co. undertook a test of the St. Peter in the Salem pool of Marion County. This test, 21 E. Tate, was located in NE NW NW 5-1n-2e, a north offset of the discovery well of the Salem pool. Announcement last week that this test was dry in the St. Peter blasted hopes for production from this formation. The Salem pool is situated on one of the best structures in the state and a dry St. Peter in this pool probably indicates that no oil will be found in the formation elsewhere in the state.

The Texas well, however, encountered saturation in the Trenton at 4,654 ft., 140 ft. from the top of the formation. This extends present Trenton production in the pool about 2 miles southward. Despite the Trenton pay, the well has been plugged back and will be produced from the Devonian.

Two Wildcats Are Successful

White County.—White County activity was featured last week by the opening of one new pool and excellent prospects of another.

Kingwood & Sinclair 1 H. M. Porter, NE SW SW 12-7s-8e, was showing as a pool opener last week after swabbing at the rate of 2½ bbl. of oil and ½ bbl. of water an hour from the Cypress sand at 2,579-85 ft. The test, southeast of Norris City, was drilled to the Benoist sand where light saturation and some water were encountered. The Benoist saturation was not considered satisfactory, however, and the well was plugged back to the Cypress. The well was being tested on pump at the end of the week.

The new White County pool was opened when operators at Benedum-Trees 1 Stinson, SW SW NE 19-7s-11e, recovered 500 ft. of oil and 90 ft. of mud on a 20-minute drill-stem test of the Tar Springs at 2,115-23 ft. The well later swabbed 23 bbl. of oil naturally in 3 hours. The present total depth is 2,123 ft. but the well will probably be deepened a few feet.

Marion County.—With favorable production being obtained from the Trenton in the Salem pool of Marion County, a Trenton test has been started in the Tonti pool about 3½ miles north of the Salem production. The test, Romine 2 Barde, SW SE SW NE 33-3n-2e, was spudded last week and is the first activity the pool has seen in many weeks.

ILLINOIS COMPLETIONS

Clay County

Clay City pool: Pure 2 Moselev Consol., S½ SE SW 3-2n-8e, dry, Glen Dean 2,417 ft., base Golconda 2,572 ft., Cypress 2,598 ft., Cypress sand 2,612-32 ft. (saturated), Ste. Genevieve 2,948 ft., Rosiclare 2,968 ft., show oil 2,972-75 ft., Fredonia 2,995 ft., T.D. 3,090 ft.

Clinton County

Bartelso pool: Schiermann 1 Schmitt, S½ SE SW SW 5-1n-3w, pumped 20 bbl., 10-qt. shot 990-98 ft., Cypress 988 ft., T.D. 999 ft.

Hoffman pool: Benoist 9 E. Knolhoff, NE NE NW 11-1n-2w, location abandoned.

Benoist 8 E. Knolhoff, SE NE NW 11-1n-2w, pumped 13 bbl., 2-qt. shot 1,321-23 ft., Benoist 1,320 ft., pay 1,320-24 ft., T.D. 1,324 ft.

Coles County

Wildcat: Allen & Sherritt 1 Taylor, SE SW SW 33-14n-10e, dry, T.D. 1,143 ft.

Edwards County

Wildcat: Seaboard 1 Bragham, SE SE SW 3-1n-14w, dry, Fredonia 3,018 ft., T.D. 3,125 ft.

Noah & Morrison 1 Smith, NE SW SE 12-2s-10e, dry, Paint Creek 2,928 ft., Benoist 3,040 ft., Renault 3,057 ft., Ste. Genevieve 3,102 ft., McClosky 3,134-36 ft., 3,197-3,209 ft., T.D. 3,212 ft.

Effingham County

Wildcat: Carter 1 N. J. Richards, SE NE SE 19-9n-4e, dry, Glen Dean 1,461 ft., Cypress 1,595 ft., Cypress sand 1,608 ft., Benoist 1,734 ft., Ste. Genevieve 1,828 ft., Rosiclare 1,847 ft., Fredonia 1,910 ft., St. Louis 2,024 ft., T.D. 2,026 ft.

Mason pool: Hinkle Drlg. 1-A Townsite, S½ SE SE NW 22-6n-5e, pumped 20 bbl. oil and 20 bbl. water, T.D. 2,505 ft.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Allendale	2	280	4,067
East Calvin	4	581	10,885
Hoodville	5	1,012	15,322
Louden	4	491	6,156
Mount Carmel	6	820	13,021
North New Harmony	5	1,259	13,850
West Liberty	2	1,157	5,703
Other pools	15	1,052	28,872
Dry holes: Fields*	7	.....	19,428
Wildcats	10	.....	23,911
Total	60	.....	141,215
Recompletions	7	1,321	.....

*Clay City 1, Omaha 1, Dix 1, West Enterprise 1, East Calvin 1, Springerton 1, Herald 1.

Fayette County

Louden pool: Carter 4 Botterbusch, NE NE SE 30-8n-3e, swabbed 78 bbl. oil and show water, 20-qt. shot 1,460-68 ft., Weller 1,443-76 ft., T.D. 1,477 ft.

Carter 3 J. W. Lancaster, NE NW NE 10-8n-3e swabbed 120 bbl., 30-qt. shot 1,512-24 ft., Cypress sand 1,501-27 ft., T.D. 1,531 ft.

Lewis Clements, receiver, 2 Guy Smith, SW SE NE 20-8n-3e, swabbed 228 bbl., 10-qt. shot 1,587-90 ft., 20-qt. shot 1,493-99 ft., Benoist 1,581-95 ft., Cypress sand 1,487-1,533 ft., T.D. 1,598 ft., P.B. 1,590 ft.

Vanderbark 3 Griffith, SW NW SE 17-7n-3e, pumped 65 bbl., 30-qt. shot 1,524-40 ft., T.D. 1,550 ft.

Fulton County

Wildcat: Lee Township Oil 1 Quigle, SE SW NE 14-7n-1e, dry, Trenton 970 ft., H.F.W. 1,005 ft., T.D. 1,005 ft.

Gallatin County

Omaha pool: Sun 1 C. W. Patton, NW NE NE 4-8s-8e, dry, Benoist 2,506 ft., Benoist sand 2,526 ft., T.D. 2,543 ft.

Hamilton County

Hoodville pool: McBride 3 York, NE SE NE 34-5s-6e pumped 194 bbl., 20-qt. shot 3,045-52 ft., old well drilling deeper, T.D. 3,054 ft.

McBride 2 York, SE SE NE 34-5s-6e, pumped 171 bbl. in 17 hr. from Aux Vases and Benoist, 30-qt. shot 3,034-50 ft., Aux Vases 3,033 ft., old well deepened from 2,957-3,050½ ft.

Kingwood 2 Morris, NE SE NE 34-5s-6e, pumped 40 bbl. oil and 4 bbl. water, 10-qt. shot 3,049-54 ft., 10-qt. shot 2,945-55 ft., 10-qt. shot 3,065-70 ft., Benoist 2,440-62 ft., Aux Vases 3,034-45 ft., 3,061-72 ft., old well deepened from 2,974-3,072 ft.

Sinclair-Wyoming 5 Stelle, NE NW SE 27-5s-6e, pumped 40 bbl. oil and 4 bbl. water, 5-qt. shot 3,049-52 ft., Aux Vases 3,049 ft., T.D. 3,052 ft.

Ohio 4 H. Matheny, SE NW SE 3-6s-6e, pumped 295 bbl. from Benoist and Aux Vases, 10-qt. shot 2,982-86 ft., Benoist 2,972-90 ft., Aux Vases 3,064 ft., T.D. 3,097 ft., P.B. 3,093 ft.

Ohio 6 H. Matheny, NE SW SE 3-6s-6e, pumped 260 bbl., natural, Aux Vases 3,076 ft., T.D. 3,098 ft.

Ohio 3 Moore, SE SE SW 3-6s-6e, flowed 300 bbl., 3 per cent water, 10-qt. shot 3,061-71 ft., Aux Vases 3,055 ft., T.D. 3,073 ft.

Kingwood 5 Wilson, NE NW SE 6-6s-7e, pumped 117 bbl., 10-qt. shot 2,878-89 ft., 20-qt. shot 2,693-2,703 ft., Benoist 2,875-96 ft., Cypress sand 2,691 ft., T.D. 3,002 ft.

Jasper County

West Liberty pool: Pure 1 G. Kistner, S½ SE NE 32-6n-10e, flowed 368 bbl., 5,000 gal. acid, pay 2,788-93 ft., 2,800-2,902 ft., T.D. 2,830 ft.

Pure 1 H. F. Craig, E½ SW SW 20-5n-10e, flowed 789 bbl., 5,000 gal. acid, pay 2,850-51 ft., 2,842-47 ft., Fredonia 2,812 ft., T.D. 2,873 ft.

Wildcat: Pure 1 F. J. Ochs-A, W½ NW SW 23-6n-10e, dry, Ste. Genevieve 2,750 ft., Rosiclare 2,764 ft., show oil 2,740-42 ft., T.D. 2,893 ft.

Jefferson County

Dix pool: Regent 1 Luchsinger, SW NE SE 3-1s-2e, dry, T.D. 1,992 ft.

Nash Redwine 2 Cameron, SE SE SW 9-1s-2e, pumped 100 bbl., 10-qt. shot 1,939-46 ft., Benoist 1,937 ft., T.D. 1,946 ft.

Johnson County

Wildcat: Benedum-Trees 1 Cavitt, SW SW NW 24-11s-3e, dry, Devonian 4,097 ft., slight show gas 4,112 ft., T.D. 4,250 ft.

Marion County

Salem pool: Magnolia 34 Shanafelt, SW NW SE 29-2n-2e, flowed 228 bbl., 135-qt. shot 4,542-4,662 ft., Trenton 4,508 ft., old well deepened from 3,451-4,630 ft.

Magnolia 37 Shanafelt, SE SW SW 29-2n-2e, flowed 177 bbl., 140-qt. shot 4,485-4,560 ft., Trenton 4,448 ft., old well deepened from 3,347-4,560 ft.

J. Mitchell 5 Lee, NW SE NE 29-2n-2e, flowed 261 bbl., 170-qt. shot 4,535-4,616 ft., Trenton 4,506 ft., old well deepened from 3,424-4,621 ft.

Patoka pool: Adams O. & G. 21 Merryman, 1,197 ft. NL, 667 ft. EL, SW 21-4n-1e, pumped 18 bbl., Benoist sand 1,395-1,402 ft., 1,419-39 ft., T.D. 1,442 ft.

Adams O. & G. 20 Merryman, SE NE SW 21-4n-1e, pumped 34 bbl., 15-qt. shot, Benoist sand 1,418-40 ft., T.D. 1,445 ft.

East Patoka pool: Eason et al 2 Kiest, SW SE SE 27-4n-1e, pumped 190 bbl., 10-qt. shot 1,368-74 ft., Cypress sand 1,355 ft., T.D. 1,374 ft.

Fairman pool: Shell 1 J. Mason, SW NW NE 18-3n-1e, pumped 53 bbl., Benoist 1,435 ft., T.D. 1,439 ft.

St. Clair County

Dupo pool: C. S. Wise 4 Tarlton, NW NE NE 33-1n-10w, pumped 85 bbl. oil and 2 bbl. water, 1,000 gal. acid, Trenton 520 ft., T.D. 570 ft.

Tarlton Oil 5 fee, SE SE SE 28-1n-10w, pumped 50 bbl. oil and 6 bbl. water, 1,000 gal. acid, Trenton 688 ft., T.D. 750 ft.

Wabash County

Mount Carmel pool: Hall Jordan 1 Coffman, NE SE NW 20-1s-12w, pumped 300 bbl., perf. 2,054-63 ft. Cypress sand 2,054-66 ft., T.D. 2,410 ft., P.B. 2,150 ft.

Illinois Prod. et al 1 Jacques, Lot 10, Blk. 210, 20-1s-12w, pumped 80 bbl. oil and 6 bbl. water, 20-qt. shot 2,056-68 ft., Cypress sand 2,052-65 ft., T.D. 2,068 ft.

L. B. Jackson 2 L. Jacques, NE NE NW 20-1s-12w, pumped 65 bbl., 20-qt. shot 2,064-76 ft., Cypress sand 2,061 ft., T.D. 2,077 ft.

J. Meyers 1 Fiscus, N½ NE NE NW 20-1s-12w, pumped 75 bbl., 2,000 gal. acid 2,348-62 ft., McClosky 2,352-61 ft., 2,368-72 ft., T.D. 2,341 ft.

O'Meara Bros. 3 Harris, SW SW SE 17-1s-12w, pumped 75 bbl. oil, 25 bbl. water, 15-qt. shot in Biehl, T.D. 2,047 ft.

Glister 1 Risley, N½ SW SE NE 18-1s-12w, pumped 225 bbl., 20-qt. shot 2,073-78 ft., Cypress sand 2,070 ft., T.D. 2,078 ft.

Allendale pool: Keneipp et al 1-D Cissel heirs, NE NE SW 1-1n-12w, pumped 130 bbl., 60-qt. shot 2,008-39 ft., Benoist 2,008-39 ft., T.D. 2,039 ft.

J. Young 6 Alka, NE SW NE 1-1n-12w, pumped 150 bbl., 60-qt. shot 2,010-28 ft., Benoist 2,008-28 ft., T.D. 2,028 ft.

Keensburg pool: Continental 8 A. E. Shultz-A, NW SE SE 8-2s-13w, pumped 35 bbl., 10-qt. shot 2,589-97 ft., Benoist sand 2,593-97 ft., Cypress sand 2,432-48 ft., T.D. 2,787 ft.

South Griffin pool: Longhorn Oil 9 Helm, SE SE SE 22-3s-14w, pumped and flowed 208 bbl., perf. 2,157-75 ft., 2,522-35 ft., Cypress sand 2,528-40 ft., T.D. 2,656 ft.

Wildcat: J. E. Baver 1 Sanders, SW NE NW 6-1n-11w, dry, Palestine 1,415 ft., Menard 1,438 ft., Waltersburg 1,490 ft., Vienna 1,530 ft., Tar Springs 1,560 ft., Glen Dean 1,667 ft., Golconda 1,740 ft., Barlow 1,831 ft., Cypress sand 1,840-55 ft., 1,875-85 ft., Paint Creek 1,928 ft., Benoist 2,001 ft., Renault 2,040 ft., Ste. Genevieve 2,068 ft., McClosky 2,148-54 ft., T.D. 2,157 ft.

Hayes & Yingling 1 Tanquary, NE SE SE 26-1s-14w, dry, T.D. 3,002 ft.

Washington County

McKinley pool: J. L. Murphy 2 Bramier, SE NW NE 29-3s-4w, location abandoned.

Wildcat: Roland Thompson 1 Hundleth, NE NE SW 30-3s-4w, dry, Menard 557 ft., Glen Dean 660 ft., Golconda 748 ft., Cypress 867 ft., Cypress sand 878 ft., Paint Creek 974 ft., Benoist 1,031 ft., Aux Vases 1,091 ft., T.D. 1,098 ft.

Wayne County

West Enterprise pool: Pure 2 W. L. Robertson, N½ NE NE 2-1n-7e, dry, Glen Dean 2,444 ft., Hardinsburg 2,456 ft., base Golconda 2,598 ft., Cypress 2,612 ft., Aux Vases 2,898 ft., Ste. Genevieve 2,945 ft., Rosiclare 2,954 ft., Fredonia 2,994 ft., show oil 2,903-05 ft., 3,003-06 ft., 3,037-39 ft., 3,047-50 ft., 3,063-68 ft., 3,070-73 ft., T.D. 3,085 ft.

Boyleston pool: Watkins 1 Rossler, N½ SE SE 35-1s-7e, pumped 128 bbl., 3,500 gal. acid, pay 3,305-07 ft., 3,316-21 ft., Fredonia 3,290 ft., T.D. 3,335 ft.

White County

East Calvin pool: Arrow Drlg. 2 Potter strip, SE SE SE NE 8-4s-14w, pumped 95 bbl., 60-qt. shot 2,794-2,818 ft., Aux Vases 2,791-2,822 ft., T.D. 2,822 ft.

W. Duncan 3-B Hughes, NE NE SE 17-4s-14w, flowed 158 bbl. in 18 hr., 40-qt. shot 2,823-50 ft., Aux Vases sand 2,823-50 ft., T.D. 2,850 ft.

W. Duncan 7-B Hughes, NE SE SE 17-4s-14w, pumped 158 bbl., perf. 2,563-93 ft., T.D. 2,970 ft., P.B. 2,927 ft.

W. W. Gray 1 fee-D, SE NW SW 17-4s-14w, pumped 170 bbl., Tar Springs sand 2,264-86 ft., T.D. 2,286 ft.

Ryan 15 Bramlett-A, E½ SE SW 17-4s-14w, dry, Tar

Springs 2,299 ft., Glen Dean 2,348 ft., Golconda 2,432 ft., Barlow 2,549 ft., Cypress sand 2,584 ft. Paint Creek 2,679 ft., Paint Creek sand 2,690 ft., Aux Vases 2,848-57 ft., 2,888-96 ft., T.D. 3,005 ft.

Burr Lambert 9 Calvin, NE NE SW 9-4s-14w, location abandoned.

North New Harmony pool: Superior 8 Ford et al C, SW SW SE 27-4s-14w, pumped 250 bbl., 3,000 gal. acid, perf. 2,870-86 ft. in McClosky, old well drilled deeper, T.D. 2,924 ft.

Superior 4 E. M. Fitton-A, SE SW SE 28-4s-14w, pumped 284 bbl. from Aux Vases and Benoist, perf. 2,667-2,722 ft. and 2,580-97 ft., 60-qt. shot 2,802-22 ft., Aux Vases 2,809-20 ft., T.D. 2,827 ft., P.B. 2,822 ft.

Sun 24 Greathouse, SE SE SW 33-4s-14w, pumped 145 bbl., Cypress sand 2,580-2,606 ft., 2,616-21 ft., Benoist 2,681 ft., T.D. 2,730 ft.

Sun 25 Greathouse, NE SE SE 33-4s-14w, pumped 420 bbl., 80-qt. shot 2,689-2,721 ft., Benoist 2,671-2,723 ft., T.D. 2,723 ft.

Superior 5 E. M. Fitton-A, SE NE NW 33-4s-14w, pumped 150 bbl., 180-qt. shot 2,683-2,729 ft., Benoist 2,673-2,723 ft., T.D. 2,730 ft.

Superior 6 E. M. Fitton-A, NE NE NW 33-4s-14w, pumped 260 bbl., 100-qt. shot 2,818-40 ft., Aux Vases 2,820-35 ft., T.D. 2,840 ft.

South Griffin pool: Rockhill 1 Reeves heirs, SW SW NE 28-3s-14w, swabbed 53 bbl. oil and 4 bbl. water, 2,000 gal. acid, perf. 2,945-56 ft., Ste. Genevieve 2,872 ft., T.D. 3,055 ft.

Mill Shoals pool: Southern Pet. 1 McIntosh, NE NW SE 30-3s-8e, pumped 45 bbl., natural, Aux Vases 3,193 ft., Ste. Genevieve 3,202-21 ft., T.D. 3,245 ft.

Springerton pool: Ben Nation 1 McIntosh, SE SW SW 31-3s-8e, Glen Dean 2,618 ft., Barlow 2,895 ft., Cypress sand 2,985-3,063 ft., Renault 3,155 ft., Aux Vases 3,230-67 ft., McClosky 3,343-48 ft., 3,367-73 ft., junked hole.

Herald pool: Mabee 2 W. L. Knight, SW SW SE 10-7s-9e, dry, Menard 2,126 ft., Waltersburg 2,208 ft., Vienna 2,258 ft., Tar Springs pay 2,273-81 ft., 2,294-2,315 ft., 20-qt. shot 2,274-82 ft., tested water, T.D. 2,340 ft., P.B. 2,276 ft.

Mabee 1 A. J. Knight, NW NE NE 15-7s-9e, location abandoned.

ILLINOIS DRILLING REPORT

Bond County

Woodruff 1 Harwood .....NE NE SE 36-7n-4w
Drilling 760 ft.

Thomas Scharf et al 1 Calufotti SE SW NE 27-7n-4w
Drilling 570 ft.

Clinton County

Wilson 1 Lippert.....NE NE NE 27-2n-1w
Set 10-in. 250 ft., drilling 604 ft.

Hughes 2 Holman.....NE SW SE 10-2n-1w
Underreaming 8-in. 1,130 ft.

J. F. Ashoff 1 Lampen.....NW NW NW 16-1n-2w
Set 7-in. 1,105 ft., waiting on cement.

P. Mosebach 1 Schlarmann.....NE NW NW 9-1n-3w
Drilling 2,825 ft.

Clay County

Bradshaw Drlg. 1 Crews est. ....NE NE NW 9-4n-5e
Degonia 1,750 ft., Palestine 1,853 ft., Menard 1,902 ft., Waltersburg 1,935 ft., Vienna 2,005 ft., Glen Dean 2,068 ft., Hardinsburg 2,108 ft., Golconda 2,148 ft., Barlow 2,263 ft., Cypress 2,272-90 ft., Cypress sand 2,272-75 ft., Paint Creek 2,365 ft., Paint Creek sand 2,389-2,425 ft., Benoist 2,445-71 ft., Renault 2,494 ft., Ste. Genevieve 2,542 ft., McClosky 2,607 ft., cored 2,601-18 ft., received dry lime, drilling 2,710 ft.

Crawford County

Culling 1 M. S. Davis.....NE SW NE 23-7n-13w
Rigging up standard tools.

Edgar County

Levy et al 1 Cockroft.....SW SE SE 11-12n-11w
Cellar and pits.

Fayette County

J. T. Elmore 1 Keith.....SE NE NW 18-6n-1w
S.D. 210 ft.

Turner Drlg. 1 Williams.....SW SW NW 6-6n-2e
Drilling 480 ft. in sand.

H. R. Spires 1 Braasch.....NE NE SW 1-5n-2e
Set 10-in. 60 ft., drilling 120 ft.

P. Holleman 1 Kruse.....NE SW NW 26-5n-2e
Glen Dean 1,642 ft., Hardinsburg 1,655 ft., Golconda 1,702 ft., Barlow 1,799 ft., Cypress 1,804 ft., Cypress sand 1,884 ft., Benoist 1,957 ft., Ste. Genevieve 2,087 ft., drilling 2,110 ft.

Ford County

Nelson et al 1 Erp.....SW NW SE 19-24n-7e
Drilling 2,665 ft.

Franklin County

W. O. Morgan 1 J. P. Miner....NW NW NE 36-6s-2e
Moving in rotary tools.

Langenfeld & Williams 1 Plumlee W½ SW NW 21-6s-1e
Drilling 1,762 ft.

Bay Oil 1 Franklin County Coal Co. ....
SW SW NE 8-6s-3e
S.D. 850 ft.

Gallatin County

R. Halbert 1 Curry.....SW SW NW 15-8s-10e
Moving in rotary tools.

Seaboard 1 Colnon.....NW NW SE 4-8s-8e
T.D. 1,720 ft., running tubing.

Hamilton County

Kingwood-Sinclair 1 Prince.....SW SW NW 31-5s-7e
Old well drilling deeper, old T.D. 325 ft., Benoist 2,960-75 ft., P.B. 2,975 ft., 15-qt. shot 2,962-69 ft., cleaning out.

Cameron 1 Griffith.....SW SW SE 31-5s-7e
Old well drilling deeper, old T.D. 3,165 ft., Aux Vases 3,036-71 ft., ripped casing 3,046-71 ft., 60-qt. shot 3,046-71 ft., cleaning out.

D. & P. Oil 1 Zellars.....SW NE SW 26-3s-5e
No. 6 coal 1,196 ft., Pennsylvanian sand 1,360 ft., Biehl 1,625-85 ft., Waltersburg 2,480 ft., Glen Dean 2,743 ft., base Golconda 2,870 ft., Cypress sand 2,902 ft., Paint Creek 3,035 ft., Benoist 3,060 ft., slight show oil 2,238-54 ft., Renault 3,174 ft., Aux Vases 3,196 ft., St. Genevieve 3,250 ft., Fredonia 3,294-97 ft., rigging up standard tools.

Jasper County

Carl Buerkle et al 1 Payne .... SE NE NE 6-5n-10e

(Continued on Page 83)

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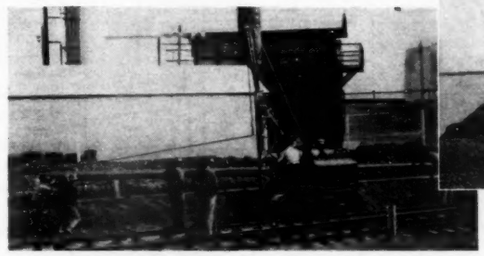

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"CLEVELANDS" Save More . . . Because they Do More

Clay County Wildcat Shows Oil in Mississippian Lime

By
R. MARNE SANFORD

WICHITA FALLS, Tex., Mar. 17.—A closely watched wildcat test in southeastern Clay County made several drill-stem tests the past week from a section of saturation in the deep Mississippian lime at the 6,200-ft. level, the deepest producing level yet found in North Texas. To wind up several weeks of continuous testing, wildcats in both Archer and Jack counties were officially gaged as small field discoveries, one producing from the Mississippian lime and another from the basal Pennsylvanian.

The indicated Clay County discovery well is Shell Oil Co., Inc., 1-A Coleman, on a small 950-acre block about 8 miles southeast of Henrietta. It is in Block 24, Calhoun County School Lands Survey. The wildcat topped the Chappell section, the upper member of the Mississippian lime in the region at 6,126 ft. and drilled shows of oil to 6,217 ft. Dry lime was found below this level. At 6,141 ft. a drill-stem test revealed a 3-minute gas blow and after 15 minutes oil started flowing. It was immediately shut in and pressures built up to 3,000 lb. at bottom of hole. The oil tested 42 gravity. Contracted to the Ellenburger or Lower Ordovician level, the wildcat was last reported drilling ahead below 6,503 ft. with no further shows reported. This wildcat is one of the few in the North Texas district to obtain favorable tests of saturation found in the Mississippian lime section.

Even though the wildcat fails to find additional saturation and be plugged back and completed from the Chappell lime level it would still be the deepest field in North Texas and the second field to produce below 6,000 ft. The Hults-Owen in Montague County produces from the 6,050-ft. level. Shell's possible discovery is located only about 6 miles southwest of the Hapgood field in extreme eastern Clay County which is producing from the Bend conglomerate from 5,972-84 ft. Possible Mississippian production in the Hapgood field is limited as shown by deep Ellenburger lime failures drilled within the field's limits.

SUMMARY OF COMPLETIONS

North Texas

	No.	Bbl.	Footage
Oil: K.M.A. and K.M.A. Deep	4	1,327	15,747
Bryson field	3	563	9,146
Olney field	6	190	4,784
Other fields	10	922	19,218
Dry: Fields	5	.....	16,458
Wildcats	4	.....	12,746
Total	32	.....	78,099

West Central Texas

Oil: Fields	2	84	6,614
Gas: Santa Anna field	1	*1.0	2,268
Dry: Wildcats	4	.....	9,975
Total	7	.....	18,857

*Million cu. ft.

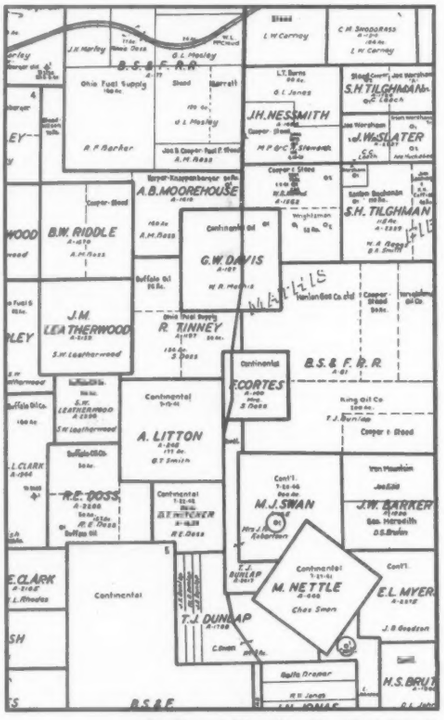
Discoveries Gaged

Archer County's Mississippian lime discovery just southwest of the Hull-Silk field which has been in the testing stages for about a month, was officially gaged the past week. The discovery, King Oil 1 Taylor, Lot 1, Section 13, A.T.N.C.L. Survey, pumped 59 bbl. of oil in 16 hours. Hole is bottomed at 4,968 ft. with the pay having been shot with 70 qt. from 4,927-44 ft. No further development has yet been indicated for the area, however, steady extension from the Hull-Silk field is expected eventually to link the two spots. No Mississippian production has yet been developed in the Hull-Silk field although production from the Cisco series of upper Pennsylvanian to the Caddo lime of lower Bend has been developed within the Hull-Silk field.

In Jack County, Continental Oil has reported an official gage of 1 Robertson, a long indicating wildcat discovery. Located in the Swan Survey, 6 miles southeast of Bryson, the well flowed 20 bbl. of oil and 1 bbl. of water through 17/64-in. choke in 4 hours. Pressures were 350 lb. on casing and 200 lb. on tubing. The hole is bottomed at 5,380 ft. with the pay section from 5,345-80 ft. having been shot with 55 qt. Previous gage pressures have not stood up long enough to permit more than a 1 or 2-hour gage. Whether the well will officially go onto production with the above-mentioned gage is not known. Some reports are that a pumping unit will be installed before final completion. The pay section in the well is the extreme lower Pennsylvanian section, the top of the Ordovician being called at 5,380 ft. The original total depth prior to plugging back was 5,577 ft.

Montague County Activity Renewed

One new wildcat and reports of another, together with plans to retest an old indicated discovery well of several months ago, renewed Montague County's wildcat exploration campaign the past week. In the northwestern part of the county, Seitz, Comegys & Seitz, Wichita Falls, has staked location for 1 J. B. Ritchie, on a 58-acre tract in the SW cor. Block 66, M. Garnett Survey, approximately 1½ miles southeast of Belcherville. Stanolind Oil & Gas Co. holds the north half of the large block and also some other scattered acreage in the area. Contract depth of the new test is set at 6,000 ft.



Southwest Mapping Co., Fort Worth

Just south of the recently opened Bryson sand producing Mathis field in southeastern Jack County, Continental Oil Co. is exploring the deep levels with two wildcats. No. 1 Robertson the past week reported a gage of 20 bbl. of oil, flowing, in 4 hours, from the basal Pennsylvanian section. It had previously indicated production in both the Mississippian and the Ellenburger in going to a total depth of 5,386 ft. The company's 1 Johnson, just south of this well, is drilling below 5,205 ft. after topping the Caddo lime at 4,415 ft.

In the southwestern part of the County Walter Gant has started reworking his old 1 Laird, indicated discovery well about 5 months ago. It is located in the north part of the R. T. Millard Survey, Abstract 470, just about ¾ mile north of the Wise County line. The test has been shut in since late last year after failing to yield commercial production from the 4,865-73-ft. level. Its original depth was 6,652 ft. When the test was reentered the past week the fluid level was found only 2,300 ft. from the top of the hole and swabbing returned 90 bbl. of oil in 10 hours.

Meanwhile negotiations are under way for a new wildcat in the area between the Gant test and the Cranfill & Rogers test 3 miles to the south and in extreme northern Wise County. The Cranfill & Rogers test was quit only a few months ago at a total depth of 6,100 ft. after finding favorable showings but being unable to develop commercial production. Reported location of the new test is 1½ miles northwest of the north Wise County failure and about on the Montague and Wise county line.

NORTH TEXAS COMPLETIONS

Archer County

Archer field: Petroleum Producers 2 King, 150 bbl. daily, pumping, 1,243-53 ft.
K.M.A. field: C. H. Staley 20 Mangold, 68 bbl. in 3 hours, ¼-in. choke, estimated 350 bbl. daily, 3,781-96 ft.
Magnolia 5 Thom, 157 bbl. daily, 22 bbl. water, 3,821-56 ft.
Griffin field: E. P. Griffin 1 Griffin, dry at 4,444 ft.
Wildcat: Petroleum Producers 1 Lynch, Sec. 20, Palo Pinto C.S.L. Sur., top K.M.A. lime 3,940 ft., Ellenburger 4,860 ft., dry at 5,001 ft.

Baylor County

Seymour field: British American 5 Turbeville, 117 bbl. in 9 hr., open tubing, estimated 225 bbl. daily, 2,500 gal. acid, 2,535-40 ft.

Clay County

Clay field: Duncan, Arnhold & Duncan 22 Duncan, 68 bbl. daily, pumping, 1,268-90 ft.
Antelope field: Shell 1 Wright, 66 bbl. oil and 50 bbl. water, daily, pumping, perf. casing 3,185-90 ft., T.D. 3,600 ft.

Cooke County

Walnut Bend field: Sinclair Prairie 7 Ramsey, 86 bbl. in 5 hr., open tubing, naturally, estimated 300 bbl. daily, 4,801-26 ft.
Cooke field: Big Indian Oil 2 Weisman, dry at 960 ft.
Voth field: C. & L. Oil 19 Perkins, 20 bbl. daily, pumping, 754-78 ft.
T.C.U. field: Dodson & Inglehart 5 Rosson, 10 bbl. daily, pumping, 1,071-97 ft.

Jack County

Bryson field Paul P. Steed 1 Dimich A, 343 bbl. daily, ¼-in. choke, 3,058-70 ft.
O. J. Perrin 8 Rhodes, 152 bbl. in 6 hr., open tubing, estimated 200 bbl. daily, 3,034-3,114 ft.
Panhandle Refg. 6 Daugherty, 20 bbl. daily, pumping, 20-qt. shot, 2,956-62 ft.

Montague County

Montague field: Claymont Oil 7 Bouldin, 9 bbl. daily, pumping, 24-qt. shot, 807-19 ft.
Wildcat: W. B. Omohundro 1 Parr, T. G. Timmons Sur., Abst. 727, top Caddo 5,678 ft., Simpson 5,956 ft., Ellenburger 6,000 ft., dry at 6,019 ft.
Ringgold field: Gulf 4 Worsham, top Caddo 5,660 ft., Ellenburger 5,927 ft., dry at 6,092 ft.

Wichita County

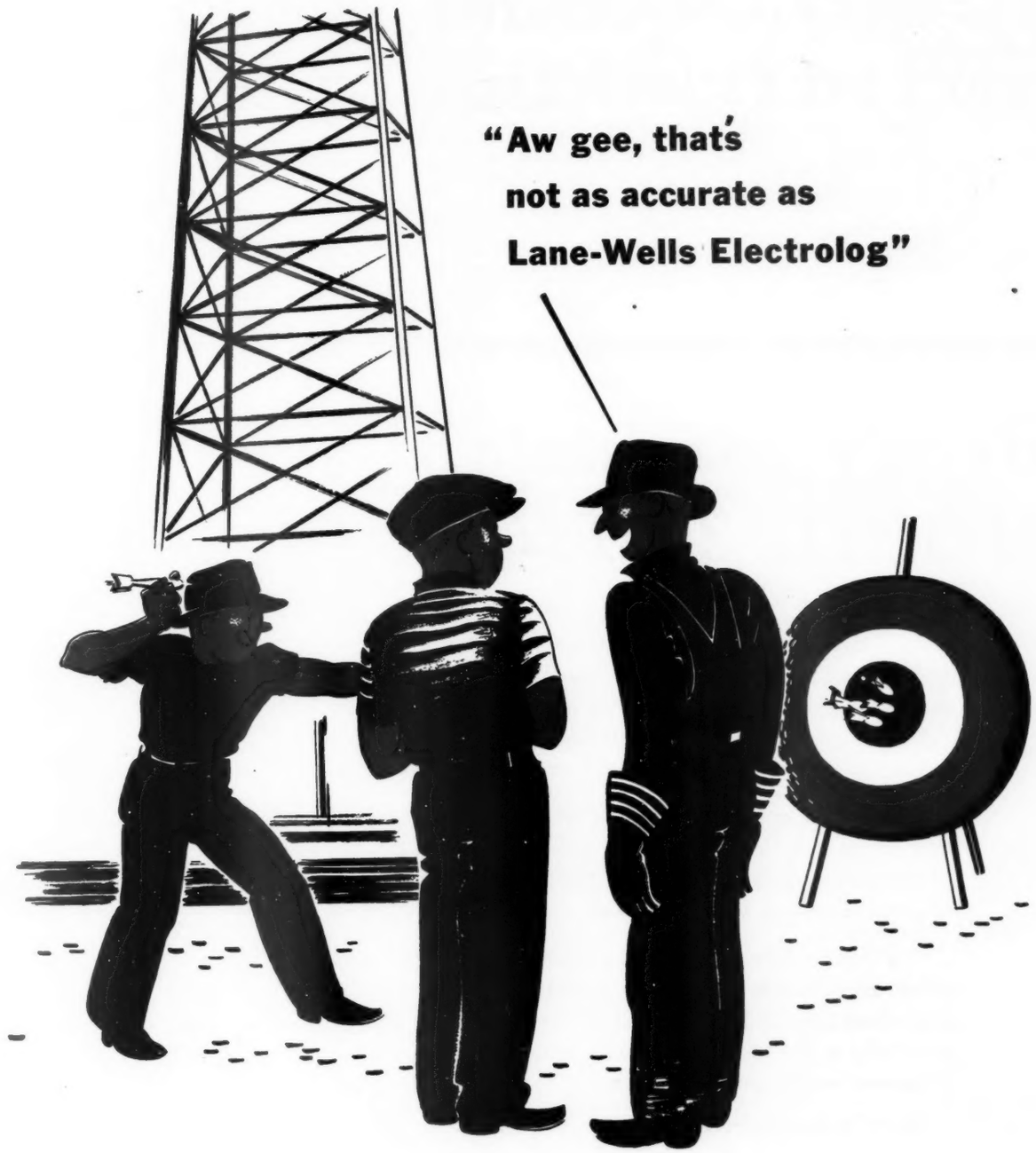
Wichita field: W. E. Prod. 4 Glass, 29 bbl. daily, pumping, 1,309-26 ft.
K.M.A. field: H. B. Wallace 4-D Logan B, 86 bbl. in 3 hr., ¾-in. choke, 230-qt. shot, est. 290 bbl. daily, 3,726-69 ft.
K.M.A. deep: Fain-McGaha Oil 3-E Griffin B, tip Ellenburger 4,315 ft., 67 bbl. in 4 hr., ½-in. choke, 4,318-26 ft.

Wilbarger County

Wilbarger field: W. T. Waggoner 24 Waggoner, 45 bbl. daily, pumping, 1,674-89 ft.
K.M.A. field: J. A. Woods 4-A Womack, dry at 4,082 ft.

Young County

Olney field: Charles B. King 4 Brown, 4 bbl. daily, pumping, 541-54 ft.
M. J. and Lucy Grove 2 Jones, 2 bbl. daily, pumping, 515-25 ft.
W. F. Palmer 12 Campbell, 4 bbl. daily, pumping, 987-89 ft.
E. C. Jeffery 5 Hill, 7 bbl. daily, pumping, 927-33 ft.
Petroleum Producers 4 Rogers A, 75 bbl. daily, pumping, 880-91 ft.
Hazel Sparks 7 Clark, 98 bbl. daily, pumping, 873-93 ft.
Wainwright 2 Rogers, dry at 880 ft.



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Wildcats: E. D. Willis 1 Stewart D, David Dawson Sur., Abst. 76, dry at 1,212 ft. W. R. Stafford 1 Box, Sec. 1911, T.E.&L. Sur., dry at 514 ft.

NORTH TEXAS WILDCAT REPORT

Archer County

W. B. Hamilton 22 Cartwright, 660 ft. from W and S lines, James Webb Sur., Abst. 664, T.D. 5,211 ft., P.B. 5,164 ft., 60-qt. shot 5,149-61 ft., swabbing and coring est. 30 bbl. oil daily.

Walter Gant 1 Hunter, SE NW Sec. 7, Blk. 1, H.&T.C. Sur., top Ellenburger 5,370 ft., T.D. 5,391 ft., cemented back 5,120 ft.

King Oil 1 Taylor, Lot 1, Sec. 13, A.T.N.C.L. Sur., top Ellenburger 4,963 ft., T.D. 5,055 ft., shot off pipe with 70-qt. shot from 4,927-44 ft., swedged out casing and now running tubing to test, hole filled 800 ft. in 2 hr. after shot.

Deep Oil and Christie 1 G. Moer, SW SW Sec. 21, Clark & Plumb Sur., Blk. 3, P.B. 3,830 ft., 7-in. 3,754 ft., prepare to perf. casing.

W. B. Hamilton 1 C. E. Graham C. SE part of Gibenrath Sur., Abst. 136, 2,000-ft. test, S.D. 1,975 ft., prepart to drill deeper.

Jack Story, Jr., 1 L. F. Wilson, NE Lot 4, Sec. 86, A.T. N.C.L. Sur., 1,600-ft. test, show oil 1,543-50 ft. in sand, installing pump 1,550 ft.

Home Oil 1 Spain, NE Sec. 8, Meade Pasture subd. 55, 1,400-ft. test, moving in material.

Consolidated Oil 1 Humphrey, 467 ft. from S and W lines of E. S. Heath Sur., Abst. 176, 4,400-ft. test, drilling 4,456 ft.

George Keith 1 Prideaux, SW Sec. 1867, T.E.&L. Sur., 900-ft. test, S.D. 460 ft.

Magnolia 1 Hayton, SE SE SE Sec. 2415, T.E.&L. Sur., 5,400-ft. test, top Palo Pinto 3,067 ft., drilling 3,776 ft.

Baylor County

Hattie B. Madden 2 J. J. James, Sec. 150, T.&N.O. Sur., show oil 1,352-63 ft., lost drill pipe 2,308 ft., S.D.

Rogers & Lanfair 1 Howe, J. Howe Sur., Abst. 572, show oil 1,445-52 ft., S.D. 3,115 ft., T.D., may drill deeper.

Baldwin & Reed 1 Robertson, 3,600 ft. from N and 630 ft. from E lines Robertson C.S.L. Survey, Abst. 280, old well drilling deeper, old T.D. 2,994 ft., prepare to deepen.

Clay County

Carlos Wagner 1 L. C. Thaxton, Sec. 2, T.&N.O. Sur., 6,500-ft. test, top Caddo 5,917 ft., T.D. 6,135 ft., may abandon.

Bridwell Oil 1 W. H. Myers, C. Thompson Sur., Abst. 444, 5,500-ft. test, drilling 5,198 ft.

Gulf 1 C. W. Scaling, NW NW Sec. 31, T.&N.O. Sur., Abst. 685, 6,000-ft. test, drilling 4,396 ft.

L. T. Burns 1 Southerland, NE cor. of 100 acres of Sec. 63, J.H. Belcher Sur., 5,500-ft. test, top Caddo 5,322 ft., drilling 5,340 ft.

L. W. Stanford 1-A Edrington, 8,689 ft. from S and 150 ft. from E lines of F. W. Grassmeyer Sur., Abst. 694, 1,200-ft. test, prepare spud, S.D. for weather.

George Graham 1 Hansard, 1,736 ft. from N and 914 ft. from W lines of lease in Thornberry subd., 1,250-ft. test, show oil 400-22 ft., installing pump to complete, T.D. 1,144 ft.

L. T. Burns 1 Fred Wines, 593 ft. from N and 476 ft. from E lines of Sec. 1, Halsell subd. No. 1, 5,500-ft. test, location.

George Graham 2 Hansard, 1,736 ft. from NW and 614 ft. from SW lines Sec. 8, Thornberry subd., 300 ft. SW of No. 1 well, 1,150-ft. test, first report.

Cooke County

Texas Co. 1 Bindel, 1,530 ft. from N and 330 ft. from W lines of Francis Hughes Sur., Abst. 439, 3,000-ft. test, location.

Hood County

W. G. Martin 1 W. G. Thorman, E. cor. of 2,956-acre ranch, F. F. Anderson Sur., 5,000-ft. test, spudded and S.D.

Aztec Oil 1 Gallagher, SW SE Robert Alway Sur., 3,000-ft. test, S.D. orders 2,200 ft.

Jack County

Continental 1 Robertson, M. J. Swan Sur., Abst. 1659, top Ordovician 5,380 ft., T.D. 5,577 ft., P.B. 5,514 ft., swabbing est. 50 bbl. oil per 7 hr. but will not flow.

R. A. Conkling 1 M. Hoffle, A. James Sur., Abst. 318, 3 mi. S of Antelope, 3,500-ft. test, T.D. 3,128 ft., pulled 7-in., will rerun after reaming hole, S.D., weather, 3,165 ft.

K. N. Davis 1 Jones, NW cor. E½ Sec. 2555, T.E.&L. Sur., 1 mi. SE Perrin, 2,500-ft. test, moving in rig.

Harper-McClintock 1 Kinder, 1,400 ft. from E and 467 ft. from N lines, Sec. 2667, T.E.&L. Sur., 6⅝-in. casing 1,640 ft., T.D. 1,840 ft., reaming casing to T.D.

O. J. Perrin 1 Brumbelow, 1,045 ft. from S and 720 ft. from E lines, H. C. Ayers Sur., Abst. 4, S.D. 3,505 ft. after electrical survey.

Adam Grafe 1 H. R. Bloodworth, 6,986 ft. from S and 3,244 ft. from N lines, William McDonald Sur., Abst. 380, 3,500-ft. test, moving in material.

Montague County

Walter Gant 1 Will Laird, R. T. Millard Sur., Abst. 470, 7 mi. W of Sunset, T.D. 6,651 ft., P.B. to 6,596 ft., perf. casing 4,865-73 ft., best gage for 125 bbl., swabbing in 6 hr. after S.I. for 10 days, rotary moved off, may plug back again and test Strawn series oil shows.

Throckmorton County

Rathke Oil 1 Swagerty, 495 ft. from N and 746 ft. from E lines of SW¼ Sec. 258, B.B.B.&C. Sur., 5,000-ft. cable-tool test, drilling 1,425 ft.

Humble 1 Durham, NW NW Sec. 1627, T.E.&L. Sur., top Caddo 4,182 ft., T.D. 4,428 ft., P.B. 4,241 ft., P.B. to test show 540-50 ft., flow declines to 1 bbl. daily at deep level.

Wichita County

R. H. Larsen 1 Karrenbrock, 675 ft. from N and 625 ft. from E lines of J. Aldredge Sur., Abst. 4, 7-in. 580 ft., drilling 620 ft.

Underwood 1 E. D. Owens, SW SW Sec. 40, Specht & McCutchin subd., 1,250-ft. test, location.

Wilbarger County

W. H. Gant 1 Mock, Sec. 23, Blk. 11, H.&T.C. Sur., 6,000-ft. test, drilling 4,639 ft.

Ray Brothers 1 Henry Streit, 72-acre tract in S. N. Gosnel Sur., Abst. 1231, running 5½-in. casing, T.D 2,058 ft.

S. S. Kouri and W. B. Omohundro 1 Kelly, 467 ft. from S and W lines of Sec. 54, Blk. 13, H.&T.C. Sur., 4,000-ft. test, location.

Wise County

Manahan Oil 1 E. R. Collier, J. M. Wade Sur., Abst. 868, corrected depth 7,500 ft., prepare to drill ahead below 6,047 ft., repairing rig.

Young County

E. Lennington 1 Perry, 165 ft. N of C of river and 46 ft. from W line of 126-acre A. W. Perry farm in Oliver T. Brown Sur., Abst. 25, S.D. 165 ft.

Ben H. Rankin 1 Mary Logan, SW part Blk. 2, J. W. Doty Sur., 8 mi. NE Graham, 2 mi. W Nelson field, tested 1,000,000 cu. ft. gas from 4,288-95 ft., top Marble Falls 4,470 ft., S.D. 4,475 ft.

Dorian & Farrell 1 Grigsby, Sec. 416, T.E.&L. Sur., 7-in. 3,972 ft., show oil 3,979-89 ft., bailed 1½ gal. oil per hr., T.D. 4,991 ft., P.B. 3,989 ft., 40-qt. shot, made 3 bbl oil in 1½ hr., testing.

WEST CENTRAL TEXAS

FORT WORTH, Tex., Mar. 17.—Several closely watched wildcat tests which have been indicating field discoveries for several weeks were completed last week. Official gage was reported for one Fisher County discovery well of several months ago, while another prospective strike in the same county was being tested after acid in saturated lime. Official gage was reported for a new strike from the Cook sand midway between the Stith and the Akard fields in southern Jones County, while only a few miles northeast of the Akard field and near Hawley another once-hailed discovery was declared a failure.

Increased amounts of oil are being recovered by swabbing at the Al Landres and H. J. Eisele 1 Moses Newman, Section 8, Block 20, T.&P. Survey, prospective discovery in southern Fisher County, 14 miles northeast of Sweetwater. It was treated with 1,000 gal. from 3,417-24 ft. after 7-in. casing was cemented at 3,412 ft. The oil recovery amounted to about 20 per cent of the total fluid volume on early tests, however, it has increased to about 50 per cent of the fluid volume.

Also in Fisher County, official gage was reported for the discovery well of several months ago near McCaulley. It was F. A. Stephenson 1 Maberry, 660 ft. from the south and 1,980 ft. from the west lines of Section 56, Block 1, H.T.&B. Survey, ½ mile southeast of McCaulley. The strike was drilled in during No-

(Continued on Page 100)

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DENVER CITY, TEXAS
Tel. 54—J. Roy Derrick

Prospective Pool Opener Near Refugio May Help Frio Play

By F. L. SINGLETON

CORPUS CHRISTI, Tex., Mar. 18.—The outcome of a scheduled production test of a prospective pool opener in Refugio County was attracting most attention this week in Southwest Texas. Operators also are watching developments in proven fields as several important extensions seem indicated.

Southern Minerals 1 R. H. Wood, 3 miles southeast of the Refugio townsite, Refugio County, was being tested through perforations after 5½-in. pipe was cemented at 5,905 ft. Total depth is 5,908 ft. Casing was cemented following a 15-minute drill-stem test at 5,900-08 ft. which recovered 920 ft. of 37.9-gravity oil, 160 ft. of salt water, and tested 115 lb. pressure. The well is on strike with the Refugio, Tomoconnor and La Rosa fields. Successful completion would result in a revival of wildcatting along this particular sector of the Frio trend.

The producing limits of the Clara Driscoll and South Clara Driscoll fields, Nueces County, were being brought closer together as Texas Conservation Oil Co. 2 Huie, 1 mile north of the Clara Driscoll field was reported to be showing for production while testing through perforated casing in the 5,600-ft. sand. Total depth is 6,000 ft., and 5½-in. casing was cemented at 5,870 ft. following a drill-stem test. Additional sand was reported logged at 5,200 ft. Recent extensions and new sand discoveries in both fields resulted in an increase in drilling activity.

Interest in the Robstown field, Nueces County, was being revived as Jay Simmons prepared to test 1 Nauman, 1,250 ft. east of the discovery well. Total depth is 6,000 ft. Casing was cemented at 5,722 ft. to test a sand section at 5,637-44 ft. where a drill-stem test recovered 280 ft. of oil and 30 ft. of salt water. This field was opened in 1939. Production has been limited to a small area because of erratic sand conditions which curtailed development.

The anticipated large-scale drilling program around the east flanks of the Stratton-Agua Dulce fields continues to gain momentum. Approximately 19 active operations are listed for the area. Additional field tests and semiwildcats are being announced for the area each week. The latest outpost to be announced is Seaboard Oil Co. 1 Kansas City Life Insurance Co. about 2 miles northeast of production in Section 196.

Seaboard Oil Co., which recently established deep sand production on the east side of the Luby field, Nueces County, is starting another projected deep test, 3,000 ft. west of production. The well is 51 Luby, Canutillo Colony Ditch Co. Survey, Block 1, Section 3.

In San Patricio County, Paul G. Benedum announced location for a 5,400-ft. wildcat, 4 miles south of the town of Taft in the NE Section 67, Coleman-Fulton Pasture subdivision. The well is 1 C. F. Jones. Protection acreage is held by several major companies.

A major extension to the newly opened Willamar field, Willacy County, was indicated as Pan American 1 Kent, approximately 1½ miles northwest of the discovery well, flowed a slight spray of oil and estimated 3,000,000 cu. ft. of gas per day through a ¼-in. choke while testing through perforated casing at 7,845-85 ft. and 7,925-70 ft. Tubing pressure was 2,500 lb. At the close of the week the well had been killed and another test was scheduled to be made. Pan American 1-B Community, south of the discovery well, continues testing and during a 16-hour gage the well flowed 34 bbl. of 30-gravity oil through a 7/32-in. choke.

The Rio Grande Valley area received an interesting wildcat operation as Union Oil Co. of California prepared to drill 1 Maura Chavona, 3½ miles southeast of Alta Mesa, Brooks County. This is a projected 6,500-ft. test. In the southeastern part of the county. Humble Oil & Refining Co. is reported to have assembled a large block centering in the "La Alameda" and "La Ecantada" grants.

A new depth record for the Rio Grande Valley area was established as Pure 4 Gatewood Newberry, southwest of Point Isabel, Cameron County, continues to drill below 10,800 ft. Seven-inch casing was recently cemented at 7,750 ft. The well is about 2,800 ft. northeast of 1 Gatewood, a dry hole.

In the Balcones fault-line district, and in the old Salt Flat field, Caldwell County, Wiegan Brothers are believed to have a crevice well in 3 DeVaughn, which blew out from the Taylor at a total depth of 2,260 ft., making oil, gas and drilling mud. Casing is being cemented for a production test before drilling to the Edwards lime.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Lower Gulf Coast			
Oil: Fields	10	1,341	52,199
Dry holes: Fields	2		11,367
Wildcats	2		9,620
Total	14		73,186
Laredo District			
Oil: Fields	8	843	26,892
Gas wells: Fields	1		2,309
Wildcats	1		4,310
Total	10		33,511
San Antonio District			
Oil: Fields	4	39	4,329
Dry: Wildcats	2		6,985
Total	6		11,314

SOUTHWEST TEXAS COMPLETIONS

LOWER GULF COAST DISTRICT

Bee County

Genevieve field: J. R. Dougherty 7 Hicks, 60 bbl., 7 64-in. choke, sand 4,169-78 ft., T.D.

Goliad County

Weser field: W. R. Davis 2-B Albrecht, 48 bbl., ¼-in. choke, perf. casing 5,214-16½ ft., T.D. 5,289 ft.

Jim Wells County

Orange Grove field: Henshaw Bros. 1-B Blaschke, 95 bbl., ⅛-in. choke, perf. casing 5,097½-5,100 ft., T.D. 5,103 ft.

Karnes County

Wildcat: H. J. Baker 1 Yanta, dry, T.D. 2,610 ft.

Nueces County

South Clara Driscoll field: Magnolia 2 Dallas Joint Stock and Bank, 80 bbl., ⅛-in. choke, perf. casing 3,830-35 ft., T.D. 3,835 ft.

Clara Driscoll field: Wellington 2-D Driscoll, dry, T.D. 8,055 ft.

Richard King field: Southern Minerals Corp. 17-B King, 105 bbl., ⅛-in. choke, perf. casing 5,639-47 ft., T.D. 5,647 ft.

Stratton field: Bay-Tex 6 Union Central Life Ins. Co., 165 bbl., ⅛-in. choke, perf. casing 6,548½-53 ft., T.D. 6,805 ft.

Southern Minerals 10 Stratton Community, 97 bbl., 7/64-in. choke, perf. casing 6,519-35 ft., T.D. 6,730 ft.

Wildcat: Sun 1 Klostermann, dry, T.D. 7,010 ft.

Refugio County

Fagan field: Norsworthy 3 Fagan, 140 bbl., ⅛-in. choke, perf. casing 5,605-15 ft., T.D. 5,850 ft.

Tomoconnor field: Quintana 26-A Willimas, 520 bbl., ¼-in. choke, perf. casing 5,855-63 ft., T.D. 5,925 ft.

Victoria County

Coleto Creek field: Albert Plummer 5-B Terrell, 51 bbl., 5/32-in. choke, sand 2,814-37 ft., T.D.

Victoria field: W. Stewart Boyle 1 Fox, dry, T.D. 3,312 ft.

LAREDO DISTRICT

Duval County

Casa Blanca field: Magnolia 13 Duval County Ranch Co., 60 bbl., pumping, sand 1,035-40 ft., T.D.

Cedro Hill field: Magnolia 24 Duval County Ranch Co., dry, T.D. 1,488 ft.

Charamousca field: Magnolia 2 Duval County Ranch Co., 50 bbl., pumping, perf. casing 1,591-92 ft., T.D. 1,593 ft.

Wildcat: J. L. Collins 2 Adami, dry, T.D. 1,504 ft.

Hidalgo County

Samfordyce field: Phillips 1 Villalon, 67 bbl., 3/32-in. choke, perf. casing 3,882-89 ft., T.D. 4,112 ft.

Jim Hogg County

Colorado field: Humble 8-B King, 89 bbl., ¼-in. choke, T.D. 3,017 ft.

Kelsey field: Sun 1-B Trevino, 187 bbl., 5/32-in. choke, sand 4,745-55 ft., T.D 4,764 ft.

Magnolia 3 State-Marshall, 155 bbl., ¼-in. choke, perf. casing 4,727-30 ft., T.D. 4,740 ft.

Live Oak County

White Creek field: P. H. Korges, dry, T.D. 1,614 ft.

Starr County

Sun field: Sun 1 Pena, dry, T.D. 5,216 ft.

Wildcat: Complete Oil Well Service, Inc., 1 Garcia Land & Livestock Co., gas well, perf. casing 3,371-75 ft., T.D. 4,310 ft.

Webb County

Glen field: Transwestern 7 Yeager-Stroman, 60 bbl., pumping, sand 2,134-54 ft., T.D.

Transwestern 8 Yeager-Stroman, 175 bbl., pumping, sand 2,151-72 ft., T.D.

Zapata County

Lopeno field: L. V. Chenoweth 1 Martinez, gas well, T.D. 2,309 ft.

SAN ANTONIO DISTRICT

Bexar County

Gas Ridge field: Southwest Drilling Co. 11 Covell, 2 bbl., pumping, T.D. 436 ft.

Southwest Drilling Co. 13 Covell, 2 bbl., pumping, T.D. 440 ft.

Caldwell County

Tenney Creek field: Ellmag Oil Corp. 2 Connelly, 33 bbl., pumping, T.D. 2,610 ft.

Guadalupe County

Elm Creek field: Walter Marshall 2 Thomas, 2 bbl., pumping, sand 808-41 ft., T.D. 843 ft.

La Salle County

Wildcat: William H. Spice 1 D. C. Reed, dry, T.D. 5,715 ft.

Travis County

Wildcat: J. C. Tittle 1 Green, dry, T.D. 1,270 ft.

SOUTHWEST TEXAS DRILLING REPORT

Dimmitt County

Humble 1 Catarina Farms, T.&N.O. Sur. 57, drilling shale 3,920 ft.

Duval County

H. J. Mosser 1 Hoffman, B.S.&F. Sur. 121, dry, T.D. 3,015 ft.

Jim Hogg County

Forest Development Co. 1 Ramirez, drilling shale 2,412 ft.

William F. Morgan 1 Lopez, coring shale 2,735 ft.

Sal Vieja Oil Co. 1 Pena, Sur. 578, S.D. 3,120 ft.

Sun 1 McCampbell, S of Hebronville, drilling sandy shale 5,163 ft.

Kentucky Fields

(Continued from Page 72)

F. J. May on Island Creek in Pike County; building roads to 5298 Joe King in Bates Branch and to 5299 Richard Hall, both in Knott County.

The Kentucky-West Virginia Gas Co. has completed 608 J. W. Bates in Knott County at 2,910 ft. in shale with gas production of 267,000 cu. ft.

The Inland Gas Corp. is moving rig to 220 Hindman Settlement School tract, Smith Branch of Carr Creek in Knott County; moving rig to 222 C. F. Conley, Rockhouse Fork of Paint Creek in Johnson County.

Cumberland Petroleum 64 L. C. Bailey, deep test near Oil Springs in Magoffin County, is below 4,332 ft. and is the center of much attention. Several companies have contributed to this test and drilling is continuing in a break below Trenton with St. Peter sand the main objective.

EASTERN KENTUCKY COMPLETIONS

Knott County

Kentucky-West Virginia Gas Co. 608 J. W. Bates, Bates Branch, 2,910 ft., shale, 267,000 cu. ft. gas.

WESTERN KENTUCKY

Daviess County

Knottsville district: Teller 1 C. J. Aull, dry, T.D. 1,045 ft.

Handyville district: Stewart & Snyder 10 Anna Ezell, completed as pressure well, Jett sand 1,244-64 ft.

McLean County

City of Livermore district: Ellis 1 H. D. Thornsberry, dry, drilled deeper from 1,307 ft., through McClosky to 1,650 ft.

South Livermore district: Hupp et al 3 Livermore Timber Co., location.

Ellis 5 Stevens heirs, moving in.

Glenville district: Ohio 1 G. B. McManama, Account 2, deepening from 1,560 ft., to McClosky.

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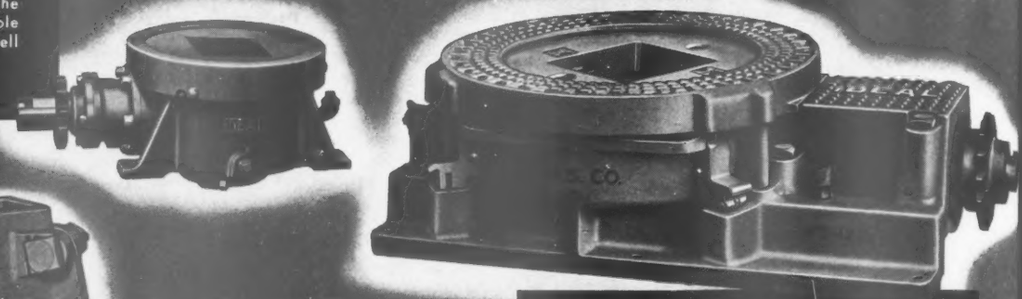
The Seismograph Rotary is the smallest in the Ideal line, being suitable for geological test-hole rigs as well as adaptable for use on other well boring outfits.



IDEAL FE-12½ ROTARY MACHINE

This machine has been designed to meet the need for a sturdy short-coupled unit for portable work. Because of the short centerline distances available—either 36" or 44" between center of table and sprocket—it is particularly adaptable to truck or trailer mounted "slim hole" drilling rigs. Many of the outstanding features of the larger types are incorporated in this machine, its drilling capacity permitting its use on many conventional rigs.

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The Type SHS-20½ is an improvement over the HS-20½ Rotary, which has been so universally popular and has pioneered high speed drilling. With drilling speeds now exceeding 500 r.p.m., National is meeting the demand with this super-speed machine. It is designed to meet the need for the highest speeds required and at the same time to carry the longest drilling strings.

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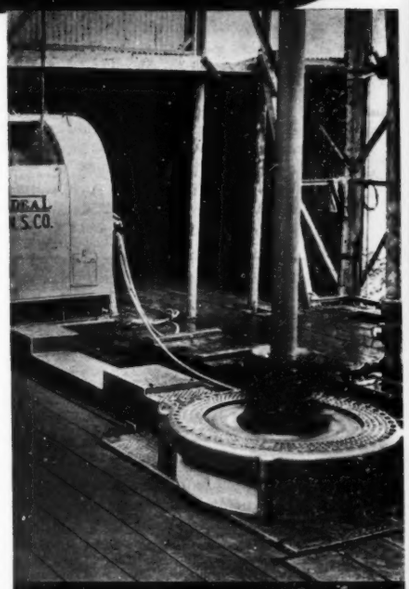

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The Type MS-20½ completes National's line of medium speed machines. Feeling a need for a heavy duty rotary machine to reach maximum depths at medium drilling speeds, National is incorporating in the Type MS-20½ features of both the heavier and higher speed rotaries, namely the Types MS-27½ and SHS-20½.

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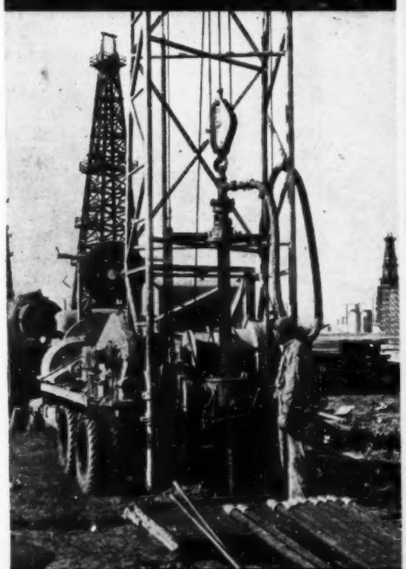
TYPE	SIZE OPENING	RECOMMENDED DRILLING DEPTH	
		FEET	SIZE DRILL PIPE
Seismograph	6¼"	1500	2-⅜"
FE-12½	12½"	3500	3-½"
FE-17½	17½"	5000	4-½"
MS-20½	20½"	15000	4-½"
MS-27½	27½"	15000	4-½"
SHS-20½	20½"	15000	4-½"



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By
L. P. STOCKMAN

LOS ANGELES, Calif., Mar. 17.—The increase of 5 cents per barrel for heavy San Joaquin Valley crude, effective March 12, is expected to spur development in heavy-oil production areas. It may result in returning to production wells that have been shut down in the Kern River, Midway-Sunset, Coalinga and other fields of similar nature in the San Joaquin Valley.

In the east end of the San Joaquin Valley in Kern County, Shell Oil Co. has already started work on a wildcat on the Smith lease in 11-26s-27e, a few miles from the Mount Poso field where the company has substantial production. Shell's new wildcat has been located in an area where production of heavy crude oil might be found against a fault as is the case at Mount Poso and Round Mountain. The comparatively recent discovery of a new accumulation in the Union Avenue district a few miles south of Bakersfield in Kern County is expected to contribute to the anticipated increase in production of heavy crude oil during the latter part of the year. This field has one well pumping 150 bbl. per day and a second well is drilling within 500 ft. of the pay depth. The discovery well at Union Avenue was drilled by Hancock Oil Co. in an area where several dry holes were completed several years ago. Acreage in the general area consists for the most part of relatively small tracts and lots.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: San Joaquin Valley	2	2,452	18,435
Coastal district	1	3,499	10,180
Los Angeles Basin	3	463	10,763
Dry	4	... ...	10,019
Total	10	6,414	49,397

Cantua Creek.—Texas Co. which is developing wildcat acreage in the Cantua Creek district of Fresno County is within a few hundred feet of the middle Hondo which is expected at about 9,650 ft. The wildcat, 27-13 Southern Pacific in 13-17s-15e, is below 9,445 ft. This is the second well drilled in the Cantua district by Texas, the first having indicated the existence of possible commercial production. The company's 1 Southern Pacific is currently producing 15 bbl. of 51-gravity oil through a 1/64-in. bean with pressures of 150 and 650 lb. on the tubing and casing, respectively. Gas production of the well, 180,000 cu. ft. daily, is sufficient to supply fuel requirements for 27-13 Southern Pacific.

New Wildcats.—Two new wildcats are to be started in the San Joaquin Valley during the summer. Tide Water Associated Oil Co. is planning to drill a test about 1 mile southeast of the south end of the Lost Hills field in 16-27s-21e. Exact location has not yet been determined. This wildcat will be drilled about 3,000 ft. east of a hole drilled by Tide Water Associated in 17-27s-21e which was abandoned at 5,424 ft. The new well to be drilled by Tide Water Associated is scheduled to 10,000 ft. or deeper. Superior Oil Co. is considering a wildcat test in 18-32s-28e, about 10 miles southeast of the Paloma field of Kern County. The company has about 2,500 acres under lease.

Strand.—Tide Water Associated has found the Vedder zone barren in the Strand field of Kern County and will plug back to the Stevens zone for a test. The deep test, 25-7-E Kern County Land in 7-30s-26e, stopped at 12,818 ft. The Vedder zone at 12,535-12,650 ft. consisted of gray sand. The well has been plugged back to 8,750 ft. and the 9⅝-in. casing was perforated with 30 holes opposite the Stevens sand. The well flowed 1,211 bbl. of 33.4-gravity oil cutting 35 per cent through a 24/64-in. bean along with 750,000 cu. ft. of gas. Two days after completion of the formation test the well was flowing 1,089 bbl. of 34.5-gravity oil cutting 31.5 per cent through the same size bean. This well, the first deep exploratory hole drilled in the Strand field, is 2,310 ft. north and 990 ft. east of SW cor. 7-30s-26e.

SAN JOAQUIN VALLEY COMPLETIONS

Coalinga Southeast Field

R. S. Lytle 55-7-F 7-20s-16e
Flowed 2,184 bbl., 32.1-gravity, 0.5 per cent cut, 1,345,000 cu. ft. gas, 28/64-in. bean. Pressures 1,120/1,320 lb. Elev. 790 ft. T.D. 7,765 ft. Kreyenhagen 6,018 ft., green sand 7,147 ft., Gatchell oil sand 7,190-7,757 ft. Bottomed in silt. 40 days' drilling time. Fresno County.

Fruitvale Field

Pacific O. & G. Co. 1 Guisti 14-29s-27e
Pumped 126 bbl., 15.8-gravity, 35 per cent cut. Elev. 423 ft. T.D. 3,602 ft. Recompleted after hole redrilled 3,110-65 ft. Kern County.

Kettleman North Dome Field

Kenda 312-28-J 28-21s-17e
Flowed 268 bbl., 45.9-gravity, 3 per cent cut, 11,791,000 cu. ft. gas, 15/64-in. bean. Pressures 2,715/3,200 lb. Elev. 776 ft. T.D. 10,670 ft. Perf. 10,159-10,665 ft. Top Temblor 6,965 ft. Completed in Avenal zone of Eocene age. 129 days' drilling time. Fresno County.

SAN JOAQUIN VALLEY DRILLING REPORT

Coles Levee Field

Standard 20-8 Kern County Land 5-31s-25e
T.D. 9,660 ft. in gray sand. Injected gas. Flowed salt water and oil. Found water 9,500-75 ft. Elev. 430 ft. Kern County.

Standard 20-9 Kern County Land 9-31s-25e
Rigged up. Elev. 304 ft. Kern County.

Elk Hills Field

Standard 42-31-S 31-30s-24e
Drilling and coring in sand and shale 6,682 ft. Elev. 1,122 ft. Kern County.

Standard 44-29-S 29-30s-24e
Drilling in sand and shale 3,994 ft. Elev. 866 ft. Kern County.

Kettleman North Dome Field

Standard 1-1-U fee 1-23s-16e
Drilling in gray sand and oil sand 11,377 ft. Formation test with packer 10,762 ft., light gas blow with water. Bottomed in Eocene. Elev. 693 ft. Kings County.

Midway-Sunset Field

North American Consd. 1-28 W.P. 28-32s-23e
Drilling 6,692 ft. in hard shale, streaks of sand. Elev. 1,560 ft. Kern County.

Paloma Field

Western Gulf 12-12-B Kern County Land 12-32s-26e
T.D. 10,752 ft. in Stevens oil sand. Tested wet. Recemented with 12 sacks cement. Elev. 288 ft. Kern County.

Strand Field

Associated 25-7-E Kern County Land 7-30s-26e
T.D. 12,818 ft. Vedder barren. P.B. 8,750 ft. Formation test in Stevens oil sand flowed 1,210 bbl., 33.4-gravity, cut 30 per cent. Elev. 334 ft. Kern County.

SAN JOAQUIN VALLEY WILDCATS

Cantua Creek District

Texas 27-13 Southern Pacific 13-17s-15e
Drilling and coring 9,420 ft. in sand and shale. Elev. 340 ft. Fresno County.

Buena Vista Hills District

Honolulu 25-P fee 10-32s-24e
Drilling 12,690 ft. in shale with streaks of hard sand. Objective is Rio Bravo and Vedder zones. Elev. 916 ft. Kern County.

Buttonwillow District

Texas 47-15 Southern Pacific 15-29s-24e
T.D. 7,956 ft. in sand and shale. Cemented fish 6,178-6,536 ft. P.B. 3,200 ft. Redrilling 7,550 ft. Elev. 287 ft. Kern County.

Maricopa District

Bankline Oil 24-24 Sunset 24-11n-23e
Drilling and coring in sand and shale 2,398 ft. Elev. 970 ft. Kern County.

McClung District

Union 31-3 Kern County Land 3-30s-26e
Drilling 5,050 ft. in sand and shale. Kern County.

Mount Poso District

Shell 77-11 Smith 11-26s-27e
Rigging up rotary drilling equipment. Located 5 miles NW of Mt. Poso field. Vedder zone test. Kern County.

Pyramid Hills District

C. C. M. O. Co. 1 Bocqueraz 17-24s-18e
T.D. 1,246 ft. in sandy shale. P.B. 850 ft. Showed salt water. Point of Rocks oil sand 765-825 ft. Elev. 718 ft. Kings County.

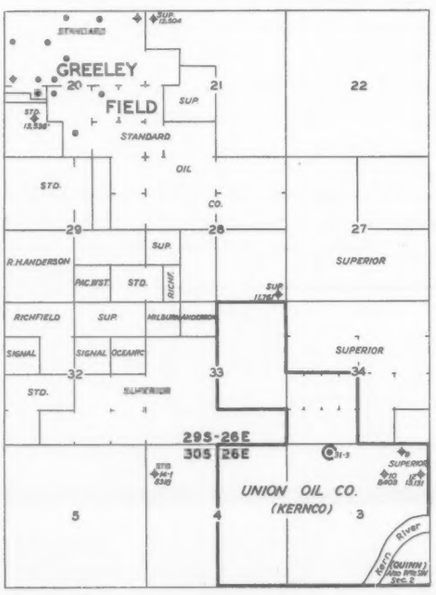
Shafter District

Continental 2-C Kern County Land 35-27s-24e
Drilling in sandy shale 11,406 ft. Elev. 986 ft. Kern County.

Tejon District

Richfield 1 Tejon ranch 2-10n-19w
Drilling and coring in gray Eocene sand and shale 10,810 ft. Elev. 1,043 ft. Kern County.

Kern Line Oil Co. 1 Wheeler Ridge 19-11n-19w
T.D. 8,435 ft. Derrick blew down with pipe in hole. Elev. 970 ft. Kern County.



Union Oil Co. has started a wildcat on a 1,680-acre block of leases in the McClung district of Kern County, California, about 2 miles southeast of the Greeley field. The drilling objective is the Vedder zone of Miocene age and deep drilling is anticipated

AVERAGE DAILY PRODUCTION

	Mar. 15	Mar. 8
Wilmington	82,725	82,225
Midway-Sunset	54,560	55,750
Long Beach	42,220	41,795
Kettleman North Dome	39,650	35,025
Coalinga	34,950	32,200
Ventura Avenue	34,075	32,550
Huntington Beach	27,430	26,550
Santa Fe Springs	23,890	24,125
Dominguez	21,025	20,840
Santa Maria Valley	19,240	19,250

LOS ANGELES BASIN

The most important development in Los Angeles Basin is the result of completion of 1 Smith in the northwestern end of the Inglewood field by Federal Oil Co. This well will oblige other operators to offset. Texas Co. has a lease adjoining the Smith property and this company will offset the deep discovery well within another week or 10 days. Tide Water Associated will probably start operations soon to explore the deep Sentous zone. Federal Oil Co. has laid a 2-in. line to a loading rack from which production is being taken by R. R. Bush Oil Co. and Triangle Oil & Refining Co. The Smith property is owned in fee by R. C. Smith of the H. C. Smith Oil Tool Co. who purchased this 40 acres a few years ago. R. R. Bush Oil Co. who drilled the deep zone well from about 7,500 ft. to the completion depth, 8,334 ft., is preparing to start operations on the Merchants property which it secured from Federal as a consideration for completing the well.

Rosecrans and Dominguez.—Developments in the Rosecrans field of Los Angeles County were discouraging the past week for deep-zone production. Two wells, Union Oil Co. 45 Rosecrans at 9,618 ft. and Universal Consolidated Oil Co. 8 Trust at 9,347 ft. tested "wet" in the ninth zone. In the Athens section of the Rosecrans district, Southern California

Petroleum has reached 7,400 ft. in 1 Howard Townsite which is west and north of Thorley Oil Co.'s deep-zone discovery. Correlation indicates that 1 Howard Townsite is about 150 ft. higher than the Thorley well but whether this means anything will not be determined for another 10 days at which time it should reach top of the pay.

LOS ANGELES BASIN COMPLETIONS

Long Beach Field

Apex Pet. Corp. 17 Morris 19-4s-12w
Pumped 110 bbl., 24.6-gravity, 11 per cent cut. Elev. 149 ft. T.D. 3,100 ft. Perf. 2,805-3,100 ft. Completed in Bixby zone of Pliocene age. 38 days' drilling time. Los Angeles County.
Shell 4 Stakemiller 29-4s-12w
Pumped 137 bbl., 24.1-gravity, 3 per cent cut. Elev. 144 ft. T.D. 4,625 ft. Perf. 3,260-3,405 ft., 3,465-3,715 ft., 3,760-3,885 ft., 3,930-4,103 ft., 4,143-4,308 ft., 4,348-4,620 ft. Recompleted after being redrilled to bottom. Los Angeles County.

Seal Beach Field

Continental 45 Bixby 2-5s-12w
Pumped 432 bbl., 18.3-gravity, 20 per cent cut. 118,000 cu. ft. net formation gas. Elev. 12 ft., T.D. 4,623 ft. Deepened from 4,421 ft. Orange County.

Wilmington Field

L. B. Oil Dev. Co. 23-W Harbor.....10-5s-13w
Flowed 298 bbl., 26.8-gravity, 0.5 per cent cut. 17/64-in. bean. Pressures 50/600 lb. Elev. 24 ft. T.D. 4,145 ft. Perf. 3,228-3,308 ft., 3,381-3,579 ft., 3,940-4,140 ft. Producing lower Terminal zone. 47 days' drilling time. Los Angeles County.
Richfield 1 West End Comm. 35-4s-13w
Pumped 145 bbl., 21.1-gravity, 2.9 per cent cut. Elev. 28 ft. T.D. 3,470 ft. in Ranger zone of Pliocene. Los Angeles County.
U. P. R. R. 171 fee 4-5s-13w
Flowed 55 bbl., 25.4-gravity, 1 per cent cut. Elev. 23 ft. T.D. 3,518 ft. in upper Terminal zone. 33 days' drilling time. Los Angeles County.

LOS ANGELES BASIN OUTPOSTS OR DEEP TESTS

Dominguez Field

Union 79 Callender 32-3s-13w
T.D. 12,720 ft. in basement Schist. P.B. 10,314 ft. Tested wet. Drilled out to 12,430 ft. Now wall scraping. Los Angeles County.

Inglewood Field

Standard 3-1 L.A.I. 17-2s-14w
Drilling and coring 9,490 ft. in Miocene shale and gray sand. Los Angeles County.
R. R. Bush Oil Co. 1 Merchants 8-2s-14w
Derrick built. Los Angeles County.

Rosecrans Field

Southern Cal. Pet. Corp. 1 Townsite.....12-3s-14w
Drilling in hard tight gray sand and shale 7,297 ft. T. P. PikeDrilling Co., contractor. Los Angeles County.

LOS ANGELES BASIN WILDCATS

Dominguez-Gardena District

Wood-Mellon 1 Wood 31-3s-13w
Taken over by Vesta Petroleum Co. T.D. 7,795 ft. P.B. 2,400 ft. Redrilled to 6,975 ft. Bailing and cleaning out. Los Angeles County.
Hiles Drilling Co. 1 Grant 29-3s-13w
Pongratz Pet. Co. drilled to T.D. 7,666 ft. and abandoned in 1940. Test wet. Recemented 6⅝-in. 7,200 ft. Los Angeles County.

Orange District

Associated 1 Olive-Orange 19-4s-9w
Derrick up. Elev. 175 ft. Orange County.

COASTAL DISTRICT

Tide Water Associated finished the largest completion listed in a long time when it brought in 47 Ventura Land & Water flowing 3,499 bbl. of clean 32.4-gravity oil and 5,125,000 cu. ft. of gas daily from 10,180 ft. This initial gage was based on a flow test of 13 hours. This new well indicates the substantial reserve held by Tide Water Associated and Shell in the Ventura Avenue field. In the extreme eastern end of the field, Lloyd Corp. 7 Lloyd is being drilled to the deep zone. Drilling is under the supervision of Ralph Lloyd who a year ago proved a theory that substantial production could be expected in the far eastern end of the Ventura structure.

West of the Ventura Avenue field along the same line of folding, General Petroleum Corp. has abandoned location for 2 Padre in the Padre Canyon field due to the fact that it was impossible to control a slide area. Structural conditions in this district are complicated and not much is known about subsurface conditions. This is particularly true of the Javon-Padre Canyon field and is also true to some extent in the San Miguelito field where the eastern limits of production remain to be determined.

COASTAL DISTRICT COMPLETIONS

Ventura Avenue Field

Associated 47 V. L. & W. 24-3n-23w
Flowed 3,499 bbl., 32.4-gravity, 1 per cent cut. 5,125,000 cu. ft. gas. 64/64-in. bean. Pressures 650/900 lb. Elev. 926 ft. T.D. 10,180 ft. Perf. 9,753-10,175 ft. in Class 4 zone of Miocene. 129 days' drilling time. Ventura County.

COASTAL DISTRICT WILDCATS

Castaic District

Barnsdall 1-17-A Honor rancho 5-4n-16w
Grading road and location. Los Angeles County.
Morse-Mangold 1 McDermott 26-5n-17w
Grading location and road, hauling in material. Los Angeles County.

Del Valle District

R. E. Havenstrite 1 Vasquez 21-4n-17w
Drilling in sandy shale 5,481 ft. Located SE of discovery well. Elev. 1,102 ft. Los Angeles County.
Universal Consd. Oil Co. 1 Dennis 21-4n-17w
Derrick erected. Elev. 1,006 ft. Los Angeles County.
Aztec Oil Co. 1 Sanborn 6-3n-16w
Grading roads and laying water line. Elev. 1,516 ft. Los Angeles County.

Huasna District

Harvey Oil Corp. 2 Huasna 11-32s-14e
Drilling in sand and shale 2,561 ft. Elev. 1,401 ft. San Luis Obispo County.

Newhall District

H. T. Purman 1 Needham 13-3n-16w
Grading road and location. Elev. 1,681 ft. Los Angeles County.

Oak Canyon District

Western Gulf 2 Lechler 31-5n-17w
Grading location. Contemplate deep test to lower Modelo. Los Angeles County.

Illinois Fields

(Continued from Page 75)

Menard 2,098 ft., Glen Dean 2,309 ft., Golconda 2,388 ft., Barlow 2,465-77 ft., Cypress sand 2,777-89 ft., Paint Creek lime 2,671 ft., Aux Vases 2,756 ft., Ste. Genevieve 2,800 ft., Rosiclare 2,818 ft., show oil 2,785-61 ft., drilling 2,850 ft.

Jefferson County

Obering 1 Morgan .....NW SE SW 25-2s-1e
Glen Dean 1,620 ft., Cypress 1,834 ft., Benoist 1,994 ft., pay 2,009-19 ft., T.D. 2,019 ft., 7-in. 2,004 ft., waiting on cement.

Lawrence County

W. Payne 1 H. Payne.....NW SW NW 20-3n-11w
Drilling 1,247 ft.

Macoupin County

Bridges & Valbert 1 Felker....NW NE SW 1-9n-7w
Drilling 1,355 ft.

Madison County

Alch & Carroll 1 Rinkel.....SE NE NW 33-5n-6w
Underreaming at 785 ft.

Marion County

Ronnine 2 Bardee.....SW SE SW NE 33-3n-2e
Spud.

McLean County

Funks Grove O. & G. 1 Crawford .....
NW NW NW 28-22n-1e
Trenton 1,995 ft., drilling 2,045 ft.

Montgomery County

O. A. Reed 1 England.....NE NW NW 19-10n-4w
Show gas 600-05 ft., drilling 675 ft.

Randolph County

J. R. Rankin 1 B. Bierman.....SW SW NE 3-7s-5w
Drilling 805 ft.

Richland County

C. B. Hill 1 Wood.....NE SE SE 21-2n-14w
Rosiclare 3,008 ft., Fredonia 3,051 ft., T.D. 3,094 ft., P.B. 2,755 ft., 5½-in. 2,740 ft., waiting on cement.

Saline County

Diggs, trustee, 1 Loonis Hardesty.....
W½ NE SW 20-7s-5e
Aux Vases 3,050 ft., Aux Vases lime 3,085 ft., Aux Vases sand 3,125 ft., Ste. Genevieve 3,155 ft., McClosky 3,195-3,210 ft., 3,225-30 ft., fishing twist off at 3,302 ft.

Tazewell County

Bartlemay 1 Mathis.....SW NW SW 24-25n-3w
Drilling 833 ft.

Wabash County

Gilster & Smith 1 Stein heirs N½ SE NE 29-1s-12w
Rig.
Harvey & Lobre 1 Strine....NW NE NW 13-1n-14w
Drilling 1,875 ft.
F. A. Farrell 1 J. W. Price estate.....
SW SE NE 14-1n-12w
Benoist 2,140 ft., Renault 2,185 ft., Ste. Genevieve 2,270 ft., T.D. 2,382 ft., running electrical log.
E. O. Olds et al 1 Parkinson NW NW SW NE 29-1s-12w
Menard 1,616 ft., Glen Dean 1,840 ft., Cypress 2,037 ft., Cypress sand 2,055 ft., McClosky 2,393 ft., 5-in. 2,418 ft., T.D. 2,418 ft., drilled plug and perf. McClosky, tested water, to P.B. and test Cypress.

Washington County

Algona 1 Marshall .....SE SE SW 12-1n-1w
Squeezed in Devonian.

Wayne County

Pure 1 T. R. Michels-A.....W½ SW NW 25-2n-7e
Location.
Carter 1 Harrison-St. Ledger.....SE NW 34-1s-9e
Rigging up rotary.

White County

Continental 1 Ackerman.....NE NW NE 25-5s-10e
Moving in rotary tools.
C. B. Brehm et al 1 Paneroy.....NE NE SE 4-6s-10e
Location.
Hiawatha Oil 1 Vail.....NW NW SE 19-7s-11e
Location.
Cherry & Kidd 1 W. W. Gray-A NE SE SE 8-4s-14w
T.D. 2,841 ft., P.B. 2,829 ft., 70-qt. shot 2,796-2,829 ft., cleaning out.
Travis 1 Davis.....SE SW NE 30-4s-9e
Kincaid 2,230 ft., Menard 2,461 ft., drilling 2,530 ft.
Benedum-Trees 1 Stinson.....SW SW NE 19-7s-11e
Kincaid 1,631 ft., Clore 1,736 ft., Palestine 1,797 ft., Menard 1,976 ft., Waltersburg 2,034-44 ft., Vienna 2,074 ft., Tar Springs 2,008-23 ft., D.S. test 2,090-2,123 ft., open 20 min., received 500 ft. oil and 85 ft. mud, 7-in. 2,109 ft., waiting on cement.
Jackson et al 1 W. A. Hamilton SW SE SW 13-7s-8e
Set 7-in. 2,616 ft., swabbed 60 bbl. water and slight show oil, S.D. 2,648 ft.

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By

T. R. INGRAM

Increased Price Paid For Oregon Basin Crude

DENVER, Colo., Mar. 17.—The posted price of Oregon basin crude was advanced 5 cents a barrel by the Ohio Oil Co. as a result of improved market conditions, the field having more than doubled its output in 1940 as compared with 1939.

Fifteen tracts of Blackfeet Indian tribal leases in Cut Bank area brought bonuses aggregating $62,243, an average of $48.45 an acre at auction sale, for 1,286 acres.

Texas Co. reduced its purchases in Kevin-Sunburst.

First drilling operations in Maverick Springs field in 15 years are getting under way.

Only two oil wells were completed, Ohio 18 Carrie Putnam, for 200 bbl., in Lance Creek, and a 72-bbl. well for Sinclair-Wyoming in Lost Soldier. Montana had two small gas wells.

SUMMARY OF COMPLETIONS

Colorado

	No.	Bbl.	Footage
Dry holes	1	.....	1,830

Wyoming

Oil wells	2	272	6,741
Dry holes	1	.....	700
Total	3	.....	6,741

Montana

Gas wells	2	*0.4	2,028

*Million cu. ft.

COLORADO

Huerfano County

Ira E. Miller 1 Hamilton, SE SE NW 20-29s-67w, east of La Veta, is reported abandoned at 1,830 ft. This well was drilled to 1,365 ft. in 1939 and temporarily abandoned. Rig again was moved on in April 1940, and drilling resumed.

La Plata County

E. B. Klem 1 Olbert .....NW SW 9-35n-12w
S.D. 4,050 ft. account weather.
Nick Spatter 1-X Bryce ..... SW SW 31-33n-9w
T.D. 4,400 ft., recemented caves at 4,000 ft.

Moffat County

Mountain Fuel Supply 7 Wilson .....
NE SW NW 23-12n-100w
Cored sand at 2,126-82 ft. showing oil saturation and 1,000,000 cu. ft. of gas.
Mountain Fuel Supply 3 Musser .....
CNL NW SW 5-11n-97w
Drilling 2,506 ft.

Rio Blanco County

Texas Co. 5 Unit, NW NE NE 34-3n-94w, Wilson Creek, joint with the California Co., which is being completed as a discovery in the Sundance sand, cemented the 7-in. on bottom at 6,570 ft., and is running perforator gun opposite Sundance sand, which was topped at 6,543 ft.

W. L. W. Royalty Co. 1 Rector, SE 34-2n-102w, Rangely field, reported abandoned at 1,443 ft., was incorrect. It is shut down at that depth and will be drilled deeper this spring.

Routt County

Mid-Colorado Pet. 1 Omholt ....NE NE SE 29-4n-87w
T.D. 3,160 ft., testing Dakota shutoff.
Craig-Moore 1-X Erwin.....C SW NE 33-7n-85w
Drilling 2,631 ft.

WYOMING

Big Horn County

McDonald & Curtis 1 Orchard ...SE NW 24-51n-93w
S.D. 1,235 ft., weather.
N. B. Ketchersid 1 Mann ..... SW SW SW 11-55n-97w
S.D. 625 ft. for 10-in. casing.

Campbell County

Continental Oil and Texas-Gulf 1 Knapp, NE SW SE 4-56n-69w, test on the Rocky Point structure, which spudded to 350 ft. last December and shut down for the winter after cementing the 13⅜-in. at 318 ft., is preparing to resume.

Carbon County

Sinclair-Wyoming has let contract to Tom Weadick, of Casper, for construction of steel building at Barioil station, Lost Soldier field, to house two 600-hp. booster engines. He also has contract for excavation and concrete work on the company's repressuring plant for the Wertz field.

Sinclair-Wyoming 18 Wertz.....SE SE NW 7-26n-89w
Drilling in Tensleep at 5,826 ft., and flowing 700 bbl. a day while making hole.
Sinclair-Wyoming 5-F Mahoney..C NW SE 34-26n-88w
Drilling 683 ft., cemented 13-in. at 416 ft.
Ohio 12 State.....C W½ NE 34-20n-78w
Drilling 3,451 ft.

Fremont County

Two operations are getting under way in the Maverick Springs field, which began shipping oil last fall after having been shut in since discovery in 1921.

Indian Oil, agent, 2 Tribal.....SW SW NW 23-6n-2w
Drilling 300 ft., set 10-in. at 295 ft., first report.
V. M. Kirk 2 Tribal.....NW NE SE 22-6n-2w
Location, first report.

Hot Springs County

O. B. Grace 4 Government, SE NW 21-43n-92w, Kirby Creek district, was dry at 576 ft.

J. W. Bales 1 Government..CWL NW SE 21-42n-90w
T.D. 972 ft., P.B. to 900 ft., redrilling.

Natrona County

K. S. Albert 1 Young.....NE SE 25-32n-82w
Cemented 10-in. at 60 ft.
Summitt Oil 2 Government...NW NE NE 21-33n-80w
T.D. 935 ft., running 8¼-in. to bottom.

Niobrara County

Lance Creek had one completion in Ohio Oil 18 Carrie Putnam, 1,200 ft. east of NW cor. 4-35n-65w, on section line, an inside well, which made 200 bbl. a day from the second Leo sand at 5,465 ft., total depth. The 7-in. was set at 5,381 ft.

Minnelusa Oil 4 Joss, SW NE SW 6-35n-65w, on the west side, an edge well, is shut down indefinitely after cementing back from 5,474 ft. to the bottom of the 7-in. at 5,299 ft. Hole was left in shape to drill to the Bell sand and possibly the Madison lime at a later date.

Ohio 7 Converse Sheep.....C NW SE 32-36n-65w
Drilling 4,081 ft.
Continental 1 Rohiff.....CSL SE NW 32-36n-65w
Drilling 4,113 ft. in red beds.
Argo 16 Elliott.....NW SE NW 5-35n-65w
Drilling 5,278 ft., top first Converse sand at 4,533 ft.
Continental 2-A Schuricht.....C SE NE 6-35n-65w
Drilling 4,795 ft. in anhydrite.
Continental 24 Tom Bell.....NW NW NW 34-36n-65w
Drilling 5,339 ft. in second Leo sand, swabbed 100 bbl. a day in first Leo at 5,322 ft.

Park County

Ohio Oil Co. posted a price of 45 cents a barrel for Oregon basin crude, effective March 1, an advance of 5 cents a barrel. A better market for black-oil products, particularly fuel oil, due in part to factory demand in filling defense orders was reported responsible for increase. Crude is now being moved from the field at the rate of 6,400 bbl. daily, or slightly ahead of 1940. Last year the production was 2,031,909 bbl., as against 1,006,756 bbl. in 1939, or more than double. There were 38 wells on production at the end of 1940. The oil averages 21.6 gravity. The field is Wyoming's largest producer of black oil, and has a very large reserve, it being estimated that 10,000 acres have been proven by the comparatively few wells drilled. Ohio Oil Co. takes considerable production from the Texas Co., for its refinery at Lovell. This refinery was built in 1937 to produce asphalt, road and fuel oils, its principal supply of crude coming from the nearby Garland field. The gasoline tops are sold to the Independent Refining Co. at Laurel, Mont., and the other products are jobbed principally out of Minneapolis.

Enalpac Oil & Gas 1 Cactus..SW SE SE 33-51n-100w
Drilling 3,423 ft. in Tensleep, top at 3,266 ft.
Stanolind 6 Rosenberg.....NW NW NW 25-58n-98w
T.D. 2,747 ft., filled back to 2,710 ft. and redrilling.

Sublette County

North La Barge Oil 7 Govt. .....C SE NE 28-27n-113w
Location.
Charles Lackey 1 Government NE SE SW 33-27n-113w
Cemented 8¼-in. at 1,260 ft.
Marvel Oil 6 Government....CEL SE SE 28-27n-113w
Drilling 987 ft.

Sweetwater County

Sinclair-Wyoming 98-A Government, SW NW SW 11-26n-90w, Lost Soldier field, was completed in the Wall Creek at 692-700 ft. for 72 bbl. a day. This is rather a good well for that horizon after 25 years of steady production. The field is now being developed in the Tensleep.

Vermillion Oil 1 Government...SW NE NE 6-12n-99w
Location.
Sinclair-Wyoming 96-A.....NE SE NE 10-26n-90w
Drilling 2,516 ft. (correction).
Sinclair-Wyoming 95-A.....SW NW NW 11-26n-90w
Drilling 3,806 ft.

Uinta County

Stove Creek Oil 2 Government C SW NW 26-14n-119w
T.D. 1,352 ft., fishing.

MONTANA

Fallon County

Montana-Dakota Utilities 152, C SE SE 19-4n-62e, Cedar Creek field, was completed at 1,500 ft. for 300,000 cu. ft. of gas with a rock pressure of 390 lb. Top of the Eagle sand was at 1,100 ft.

Montana-Dakota Utilities 151.....C NW NW 17-4n-62e
Drilling 381 ft., first report.
Montana-Dakota Utilities 153.....Lot 1, 29-4n-62e
Drilling 1,186 ft., first report.
Mondakota Dev. 1 Seargents... SW SW SW 32-8n-60e
Drilling 897 ft., first report.

Fergus County

E. & M. Oil & Gas 4 Government, SW SE SW 34-22n-18e, Winifred field, was drilled to 528 ft. and plugged back to 510 ft. and was completed in the Eagle sand for 50,000 cu. ft. of gas a day.

Hess & Tony 1 State..... CWL SW NE 36-22n-17e
S.D. 513 ft.

Glacier County

Fifteen tracts of Blackfeet Indian tribal land leases located at the south end of the Cut Bank field and immediately south and west of several wells completed this year which produced better than the average, were sold at auction the past week. They comprised a total of 1,286 acres, and brought bonuses aggregating $62,243, or an average of $48.45 an acre. The highest bid for any tract was $9,770 by Consolidated Gas-Frary for 96 acres, an average of $101 an acre, consisting of Lot 3, and NW SE 24-32-6w. Next highest price per acre was $100 by A. B. Cobb & Co. for 80 acres in N½ SW 19-32-5w. Leases require the starting of one well on each tract within 90 days. The tracts are located in the E½ of Sections 13, 24, and 25-32n-6w; N½ 30-32n-5w; NE 29-32-5, and N½ SW 19-32-5.

A. B. Cobb 2 Tribal-187.....SW SW NW 19-32-5w
T.D. 2,926 ft., rigging spudder to drill in.
Glacier Prod. 3 Corrigeux, 1,320 ft. from W and 440 ft. from N line..... 21-33n-5w
Spudded.
Hannah-Porter 1 Tribal-189.....NW SW SE 19-32n-5w
Cemented 10¾-in. at 540 ft.
Santa Rita 3 Jordan ..... C SE NE 7-32n-5w
Standing 585 ft., rig burned down, waiting on equipment.
Ed Reagan 1 Tribal-194.....CEL SE NE 22-37n-7w
Drilling 2,700 ft.

Toole County

Texas Co. readjusted its allowables in the Kevin-Sunburst field as of March 1, taking 33 per cent of potentials as against 50 per cent for most of its connections. Many of the smaller stripper wells were not affected.

Ohio 6 Howling.....SW SW NW 10-35n-2w
Drilling 325 ft., 10-in. at 155 ft.
Ohio 7 Howling.....NE NE SE 10-35n-2w
Location.
Dunkirk Adventure 1 McKechnie NW SW SE 2-31n-1w
Drilling 180 ft.
E. Morton 3 Ellingson..... CNL NE NW 23-35n-3w
Drilling 350 ft.
High Gravity Oil Prod. 1 Govt. SE NW NE 19-35n-3w
T.D. 2,200 ft., P.B. to 2,170 ft., acidized again, no results, preparing to acidize third time.
Montana Gas 1-X Nelson ..... CSL SE NE 12-35n-1e
S.D. 2,165 ft.

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keeps dollars in your pocket

THE dollars you keep in your pocket rather than spend for replacements and repairs are the true measure of the over-all economy of a pumping unit installation. To keep running efficiently with minimum upkeep, a pumping unit must first of all be constructed around a frame that is stable and rigid. *"Oilwell"* assures these characteristics by providing a DERRICK-TYPE samson post with four strong legs firmly mounted on a sturdy base of big steel beams.

The front legs are extended toward the well, and at no time does the direction of the resulting load on the saddle bearings exceed the slope of these legs. This means that the unit is entirely self-supporting, with no tendency to weave or nose over.

The "Oilwell" frame construction:

- ★ **provides a rigid and stable self-supporting assembly.**
- ★ **maintains the original accurate alignment of the bearings.**
- ★ **minimizes and equalizes stresses.**
- ★ **prolongs the useful life of parts.**

. . . thus, keeps your dollars in your pockets.

"Oilwell" pumping units have many other money-saving features, and are available in economical sizes and types for all applications. Ask for specifications.

THE STABLE AND RIGID FRAME CONSTRUCTION, *including the four-leg DERRICK-TYPE samson post, is standard* for all sizes of *"Oilwell"* pumping units. *In the smaller sizes it provides the added advantage of permitting economical twin-well pumping by means of an inexpensive V-attachment on the underside of the beam working through the samson post.*

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Branch Stores in All Oil Fields
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DIVISION OFFICES —
OIL CITY, PENNA. DALLAS, TEXAS
LOS ANGELES, CALIF.

West Virginia Wildcat Nears The 10,000-Foot Mark

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Mar. 17.—During the past week in the lower eastern fields 14 operations were completed of which 2 were dry, 11 gas wells, and 1 oil producer.

SOUTHWEST PENNSYLVANIA

On Chestnut Ridge in South Union Township, Fayette County, New Penn Development Co., William E. Snee et al are drilling at 6,554 ft. in 3 Summit Hotel (Heyn), or 159 ft. below the top of the Onondaga chert. It is gaging about 1,950,000 cu. ft. a day from the chert beds. The Oriskany sand should be reached in the next 25 ft. Here, Peoples Natural Gas Co. is drilling 4 Piedmont Coal at 4,854 ft. In North Union Township, Wasson & Co. et al drilled out cement and reached the bottom of the hole in 2 J. H. Sorg but again struck the bailer lost in the hole and are trying to sidetrack it or drill it up.

In Maryland New Penn Development Co. et al ran casing in the test on the Humberson farm on the Accident dome in Garrett County to 4,862 ft. and met an obstruction. They will now raise the pipe a few joints and underream.

SUMMARY OF COMPLETIONS

Southwest Pennsylvania

	No.	Bbl.	Footage
Gas wells	5	*0.8	14,246

West Virginia

Oil wells	1	25	1,815
Gas wells: Oriskany field	2	*3.0	10,359
Others	4	*1.3	9,396
Dry holes	2		3,632
Total	9		25,202

*Million cu. ft.

COMPLETIONS

Fayette County

Menallen Township: Wahler Powers 2 W. L. Rockwell, 60,000 cu. ft. gas, Fifth sand 2,235 ft., gas 2,236 ft., T.D. 2,300 ft.
Nicholson Township: Duquesne 1 John Spok, 268,000 cu. ft. gas, Fifth sand 2,240-99 ft., gas 2,240-45 ft., T.D. 2,303 ft.

Greene County

Center Township: Peoples 1 S. B. Huffman, 54,000 cu. ft. gas, Elizabeth sand, T.D. 3,275 ft.

Jefferson County

Beaver Township: T. W. Phillips 1 Walker Smith, 90,000 cu. ft. gas, Bradford sand, T.D. 3,193 ft.

Westmoreland County

Bell Township: Peoples 2 John McCreary, 377,000 cu. ft. gas, T.D. 3,177 ft.

DRILLING

Armstrong County

Cowanshannock Township: George K. Gray et al 1 J. N. Blose, 900 ft.
William McCollins 1 A. L. McCullough, 675 ft.
Kittanning Township: L. L. Livingood 1 H. Wright, 1,475 ft.
Local Co. 1 S. E. Heilman, 1,460 ft.
Equitable 1 Mary Stitt, 2,260 ft.
Parks Township: Peoples 1 William Keppiers heirs, pulling casing to deepen.
Plum Creek Township: Peoples 2 W. J. Boyer, 3,495 ft.
Peoples 1 Quinter Boyer, rigging up.
James Wright 1 fee, 2,380 ft.
South Bend Township: Equitable 1 Margaret Claypool, building rig.
Valley Township: Humphrey, Stone & McCall 1 J. McAfoose, 1,800 ft.

Clarion County

Limestone Township: Owens-Illinois 1 Clark Steel, 1,125 ft.
Monroe Township: Owens-Illinois 2 W. J. Altes, 1,150 ft.
Red Bank Township: T. W. Phillips 1 Daniel Wolfgang, 200 ft.

Fayette County

Franklin Township: Eberly et al 1 Clifton, 2,701 ft.
German Township: Oberly et al 2 Felix Valerio, Big Injun sand top 1,257 ft., gas gaging 450,000 cu. ft. at 1,396 ft. blew down to 240,000 cu. ft., drilling 1,468 ft.
Greensboro Gas Co. 1 Stephen Haningosky, 592 ft.
Nicholson Township: Duquesne 2 Jacob Cover, rig standing.
C. V. Emmers 1 Joseph Vaslaviski, rigging up.
Springhill Township: Marker Stephenson et al 1 John and Agnes Brojkovich, moving in rig.

Greene County

Jackson Township: Equitable 1 Clara Roberts, 860 ft., fishing.
Peoples 1 Roy L. Wise, 1,315 ft.
H. E. Milliken et al 1 E. Chaney, 2,400 ft.
Cleveland-Cameron 1 Cleveland Morris, 2,730 ft.
Monongahela Township: Equitable 1 William Hart, 1,005 ft.
Greensboro Gas Co. 1 Longenecker heirs, 2,415 ft.
D. E. Mayne et al 1 Andrew Kovack, 1,700 ft.
Judson Bell et al 2 E. R. Gabler, 1,558 ft., S.D.
Brummage et al 1 Robert Whooley, 1,334 ft.
John Conklin et al 1 S. L. Mestrezat, rigging up.
Morris Township: Romney Rutan et al 1 Albert Rutan, 1,250 ft.
Richhill Township: Charles Hart et al 1 Ross Galloway, 400 ft., underreaming.
Springhill Township: H. E. Milliken et al 1 John Minor, 1,240 ft., fishing.
Whiteley Township: H. D. Freeland et al 1 Morris B. Fox, moving in rig.

Indiana County

Armstrong Township: T. W. Phillips 1 Lewis Weiss, 1,674 ft.
Center Township: T. W. Phillips 1 Charles Johnston, 2,302 ft.
White Township: T. W. Phillips 1 Ella Campbell, 3,272 ft.

Washington County

Amwell Township: Bungard et al 1 Lucille Frazee, 285 ft.
Morris Township: Carnegie 2 Nelan heirs, 1,689 ft.
Union Gasoline & Oil Corp. 4 W. E. Craft, 2,438 ft.
Conger et al 1 C. W. Archer, 200 ft.
Somerset Township: Equitable 1 Jerry Myers, 1,183 ft.
West Bethlehem Township: Carnegie 3 Chartiers Southern R.R., 2,076 ft.
West Finley Township: Natural Gas Co. W. Va. 1 Robert Marshall, 2,210 ft.

Westmoreland County

Allegheny Township: Peoples 1 Howard Wise, 2,165 ft.
Bell Township: Dome Gas Co. 2 J. F. Wolford, 3,500 ft., S.D., engine.
Upper Burrell Township: Peoples 1 H. H. Wylie, 3,010 ft.

WEST VIRGINIA

In Monongalia County, the wildcat of the Hope Natural Gas Co. on the H. C. Greer lease in Morgan district scheduled for the Oriskany sand has started drilling and reached 800 ft. In Harrison County the deep rotary test on the C. S. Gribble farm in Grant district being drilled by this company is drilling at 9,910 ft. and appears void of production.

In Jackson County none of the tests and wildcats in Ravenswood district have yet reached an interesting stage.

Gilmer County

Center district: Carnegie 2 Franklin Maxwell, 600,000 cu. ft. gas, Big lime 1,580-1,640 ft., Big Injun 1,640-1,735 ft., gas 1,712-30 ft., T.D. 1,753 ft.

Ritchie County

Grant district: A. E. Dye heirs O. & G. Co. 3 A. E. Dye heirs, dry, Squaw sand, T.D. 1,820 ft.
Murphy district: Pittsburgh Oil & Gas Co. 3 J. P. Coyle heirs, Injun sand dry, filled back to 1,150 ft., gas sand, 33,000 cu. ft. gas, T.D. 1,705 ft.
Union district: Albert Britton 1 Hobert Hardman, dry, Big Injun sand 1,729-88 ft., T.D. 1,812 ft.

Roane County

Harper district: L. L. Reed et al 4 M. J. Hughes, 25 bbl., Salt sand, T.D. 1,815 ft.

Wayne County

Lincoln district: Owens, Libby-Owens, 440,000 cu. ft. gas, Big lime 1,093-1,267 ft., Big Injun 1,267-1,404 ft., Berea 1,836-70 ft., brown shale 2,404-2,675 ft., T.D. 2,690 ft., R.P. 410 lb.
Union district: United Fuel 4985 Henry Blankenship, 260,000 cu. ft. gas, Big lime 1,192-1,362 ft., Big Injun 1,390-1,440 ft., Berea 2,100-10 ft., brown shale 2,650-2,909 ft., T.D. 2,978 ft., R.P. Big lime gas 370 lb., total 350 lb.

ORISKANY GAS FIELDS

Kanawha County

Poca district: Godfrey L. Cabot 16 Putnam Co., 1,900,000 cu. ft. gas before shot, Corniferous lime 5,008 ft., Oriskany 5,110 ft., T.D. 5,144 ft.
Final test United Carbon Co. 1 Dock Haynes, 4,214,000 cu. ft. after shot, Oriskany sand 4,938 ft., T.D. 4,983 ft.

DRILLING

Poca district: United Fuel 4994 A. W. Price, 1,851 ft., running 8-in. casing.
United Fuel 4984 C. O. Slater, 3,187 ft.
United Fuel 5004 A. B. Jones, 593 ft.
United Carbon Co. 2 D. D. Slater, 3,185 ft.
United Carbon Co. 1 J. C. Crowder, 1,825 ft.
Columbian Carbon Co. 1 G. B. Robinson, 3,260 ft.
Columbian Carbon Co. 1 G. W. Good, 2,614 ft.
Columbian Carbon Co. 1 Shelby T. Jones, 1,255 ft.
Columbian Carbon Co. 1 Ora Harrison, 600 ft.
Columbian Carbon Co. 1 Martha Harper, 75 ft.
West Virginia Gas Corp. 2 J. H. Burdette, 3,120 ft.
West Virginia Gas Corp. 1 C. F. Hill, 2,087 ft.
Hays Oil & Gas Co. 1 C. A. Harper, 1,240 ft.

Jackson County

Ripley district: United Fuel 4896 Ethel Duff Monday, 1,057,000 cu. ft. gas, Corniferous lime 5,058-5,166 ft., Oriskany 5,166-5,213 ft., gas 5,169-74 ft., shot 5,167-91 ft., T.D. 5,215 ft.

NEW WORK

Boone County

Washington district: Owens, Libby-Owens 24 Little Coal Land Co., elev. 1,305.7 ft.

Braxton County

Birch district: Pittsburgh & W. Va. Gas Co. 7796 Maggie E. Pierson, elev. 1,139 ft.
Holly district: K. M. Hunt and H. R. Adams 1 John Fisher, elev. 1,280 ft.

Cabell County

Grant district: Earl Hanley 1 fee, elev. 699.3 ft.

Jackson County

Ripley district: United Carbon Co. 1 Godfrey L. Cabot.
United Fuel 5011 D. J. Rogers.
Spartan Gas Co. 3 S. L. Clendennin, elev. 689.4 ft.

Kanawha County

Poca district: Spartan Gas Co. 2 S. L. Clendennin, elev. 746 ft.

Putnam County

Curry district: United Fuel 1 Floyd Mabee, elev. 768.3 ft.
Vaughn Gas Co. 1 W. W. Vaughn, elev. 935 ft.
United Fuel Gas Co. 1 W. A. Womack, elev. 800 ft.

Ritchie County

Grant district: P. J. McDonough 3 J. W. Mason, elev. 638 ft.
Glen F. McBurney et al 1 Dorsey and Ruth Satterfield, elev. 867 ft.
Murphy district: Tibbs O. & G. Co. (G. L. Ballentine) 1 G. S. Tibbs, elev. 704 ft.
Union district: Hope 2 S. T. Wright, elev. 1,041 ft.

Upshur County

Meade district: Cumberland & Allegheny Gas Co. 1 Ernest Phillips, elev. 1,995 ft.
Cumberland & Allegheny Gas Co. 1 W. A. Smallridge, elev. 1,996 ft.

Wayne County

Lincoln district: Owens, Libby-Owens 2 Koonce & Zimmerman, elev. 645.9 ft.
Union district: United Fuel 5010 J. W. Blankenship, elev. 815 ft.
Southern W. Va. O. & G. Corp. 4 A. W. Preston, elev. 650 ft.

Oklahoma Fields

(Continued from Page 70)

Hunton 3,915 ft., Sylvan 3,995 ft., cored pink lime 3,915-34 ft. no show, soft drilling 3,950-70 ft., T.D. 4,010 ft. shale, electric log, perf. 3,950-60 ft., est. 2,000,000 cu. ft. gas and sprayed oil, S.I. for tanks.
Root & Anderson 1 Johnson.....NW NW SE 20-12-8
First report.
F. E. Weimer 1 Williams.....NE NW SW 16-12-10
First report.

Oklahoma County

Clyde Dorr et al 1 Riley.....NE NE SE 34-13-1
Woodford 5,445 ft., Hunton 5,535 ft., Sylvan 5,610 ft., Viola 5,710 ft., Simpson 5,740 ft., dolomite 5,670 ft., cored dry dolomite 5,760-68 ft., T.D. 5,773 ft., coring ahead.

Osage County

Dillard 1 Osage.....SE NW NW 22-21-9
Drilling 330 ft.
Superior 1 Osage.....NW SE SW 23-22-8
Cleveland 1,707 ft., show gas, sand 1,740-1,800 ft., increase in gas, Big lime 1,956 ft., show gas 1,948-2,003 ft., 8-in. 1,884 ft., drilling 2,016 ft.
Norbla and Champlin 1 Osage....SW SW SW 23-25-6
Drilling 170 ft.

Pawnee County

Dave Malernee 1-A Lucas.....NW SE NW 28-21-8
S.D. 2,013 ft.

Payne County

Wood Oil 1 Daniel.....SE SE SE 15-19-3
First report.

Seminole County

Paul J. McIntyre 1 Brown.....SW SE NE 14-9-7
T.D. 4,337 ft., Wilcox 4,333 ft., P.B. 4,262 ft., perf. Hunton 4,050-4,106 ft., swab water, heads up with gas and flows water, show oil and swab, reacidized, made 500,000 cu. ft. gas.
Mico 1 B. F. Davis.....NE NE NE 33-10-8
Booch 3,072-81 ft., dry, drilling 3,410 ft.
Bryan 1 Wisey.....NE SE SE 5-11-8
8⅝-in. 125 ft., Calvin 2,160 ft., dry, drilling 2,200 ft.
Glenn S. Norvill 1 Fleet.....SE SE SE 14-5-6
First report.
Seiboldt 1 Boren.....SW SE SW 34-6-6
Calvin 1,445 ft., Senora lime 1,710 ft., Senora sand 1,770 ft., Cromwell 2,130-60 ft., no show, Mayes 2,505 ft., cored 1,794-1,806 ft. no show, drilling 2,790 ft., lime.

Stephens County

Gulf 1 Krieger.....E½ NE SW 3-2-5w
Cored shale, dip 45°, 5,777-81 ft., cored shale 5,793-97 ft., 5,832-35 ft., drilling 5,968 ft., shale.
Skelly 4 Frensley.....NE NE 35-1s-5w
Hunton 4,605 ft., oil stain 4,638 ft., cored dolomitic lime 4,640-52 ft., show oil and gas, T.D. 4,688 ft., set 9⅝-in. 4,675 ft.

Test in Crane County Shows Oil in Ellenburger Lime

By
R. MARNE SANFORD

MIDLAND, Tex., Mar. 17.—Possibility of another deep Ordovician discovery well in southern Crane County was seen at the close of the past week. It is perhaps the most important test yet drilled in an Ordovician area in West Texas since it definitely tends to determine the trend of the heretofore random strikes in the deep levels. The wildcat is 5 miles directly south of the Sand Hills Ordovician extension field in Crane County and is also 7 miles directly north of the Abell field of northern Pecos County.

First attention was focused on the test early the past week when the Simpson section was missed entirely and the Ellenburger lime was topped at 5,584 ft., several hundred feet higher, structurally, than producers in the Sand Hills Ordovician field. The wildcat is Gulf 17 Waddell, Section 15, Block 3, H.&T.C. Survey, in the southern part of the large Waddell ranch. Drilling ahead from the top of the Ellenburger a gas zone was struck at 5,601-48 ft. which tested 6,000,000 cu. ft. of gas daily on a 45-minute drill-stem test. It also tested 95 ft. of fluid, of which 65 per cent was 49.4-gravity oil. Successive drill-stem tests substantiated the large gas volume and also revealed an increasing flow of fluid, most of which was high-gravity oil. Casing was reamed down to 5,635 ft. and plug will be drilled and testing resumed during the coming week.

The presence of an abnormal structural condition for this area was first indicated more than a year ago when a southern Crane County wildcat failed to encounter the Simpson section while several miles southwest and in northern Pecos County the old Humble 1 Young, Section 33, Block 10, H.&G.N. Survey, encountered several thousand feet of Simpson section.

SUMMARY OF COMPLETIONS

Southern West Texas

Oil: Iordan field	2	1,527	7,240
Foster field	2	3,057	8,480
Johnson field	2	1,924	8,307
Abell field	2	666	10,629
McElroy field	3	3,047	8,898
Other fields	7	3,264	19,505
Dry: Fields	2	.....	6,236
Wildcats	1	.....	3,904
Total	21	.....	73,199

Northern West Texas

	No.	Prod.	Footage
Oil: Slaughter field	12	10,479	60,257
Seminole field	5	2,661	26,384
Wasson field	2	1,850	10,188
Other fields	2	791	7,020
Dry: Wildcats	1	.....	2,303
Slaughter field	1	.....	5,012
Total	23	.....	111,164

Panhandle

Oil wells: Gray County	2	430	6,335
Hutchinson County	3	609	9,170
Carson County	1	13	2,965
Gas wells: Moore County	1	*82	2,490
Dry holes: Gray County	1	.....	3,015
Total	8	.....	23,975

*Million cu. ft.

Southeast New Mexico

	No.	Bbl.	Footage
Oil wells: Maljamar field	2	440	7,763
Other fields	2	344	8,523
Gas wells: Grayburg field	1	*1	1,801
Total	5	.....	18,087

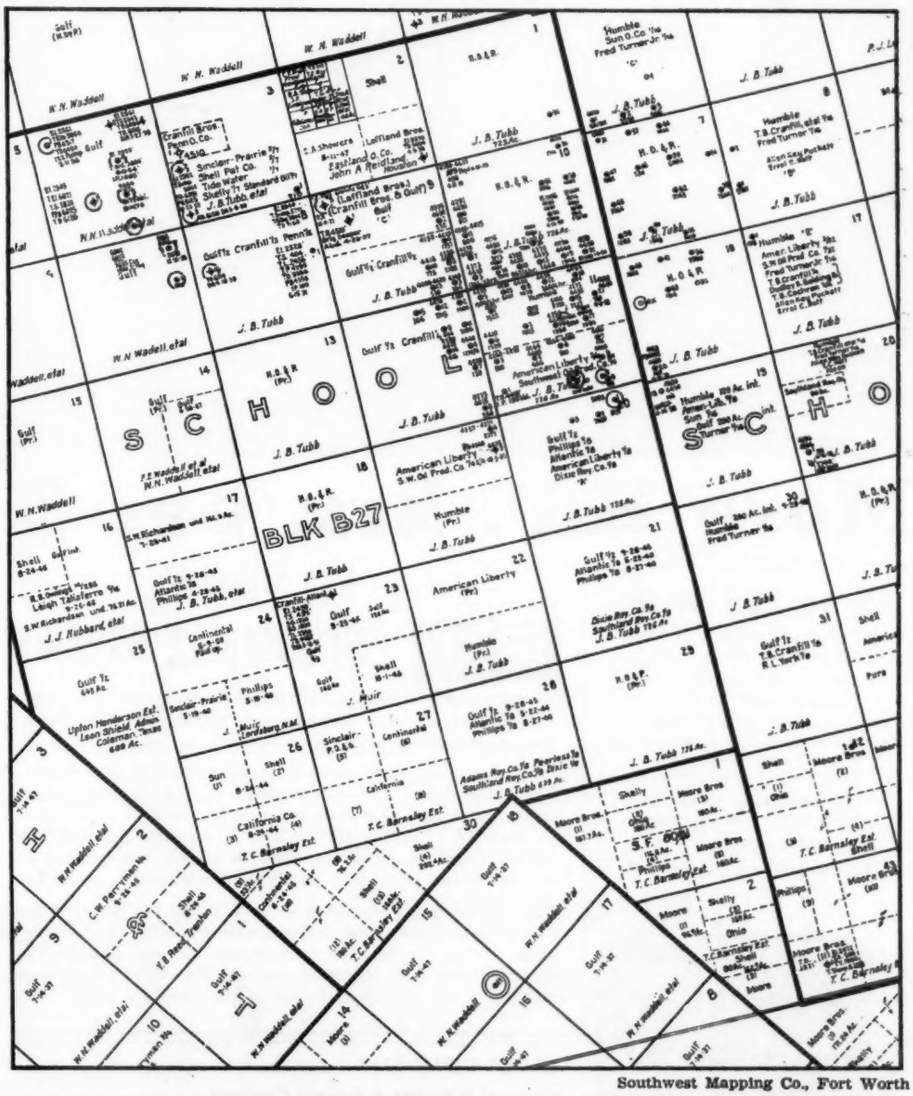
Abell Field New Horizon Indicated

A possible new producing horizon for the deep Simpson sand Abell field in northern Pecos County was indicated the past week when a west outpost to the field drilled promising shows of oil at a deeper level in the Simpson section. The shows were passed up, however, in continuing toward the Ellenburger lime. The test is Magnolia 1 State-Sharp, Section 22, Block 9, H.&G.N. Survey, 1 mile north and slightly west of the discovery well for the field. A 50-minute drill-stem test from 5,905-53 ft., with ⅝-in. top and bottom chokes, revealed 330 ft. of fluid of which 150 ft. was oil and gas-cut mud and 180 ft. was 41.2-gravity oil. The gas volume was estimated at the rate of 40,000 cu. ft. daily. At last reports it was going ahead below 5,942 ft. The outpost had been deepened after it was a failure in the regular Simpson section which is productive in the field proper.

Plans are being formulated by J. L. Greene and associates, Midland, for the drilling of a 2-mile north outpost to the Heiner area in Pecos County opened 2 weeks ago to production from the Ellenburger lime of Ordovician age. The discovery was Culbertson & Irwin, Inc. 1 Heiner, 9 miles west of the Apco field and in the old shallow Byrne field. The proposed new operation will be 12,000 ft. north of the discovery and tentatively located in C W½ E½ Section 29, Block 10, H.&G.N. Survey. It is reported to be a 6,000-ft. operation. The discovery well was completed as a small producer from the 5,400-ft. level.

Tom Green County

In May of 1940 a discovery well was officially gaged and shut in for lack of outlet in Tom Green County. It was B. C. Mann 1 Joe Funk, 25 miles northwest of San Angelo and in the NW NE Section 37, Block 5, H.&T.C. Survey. It has been shut in since that of-



Southwest Mapping Co., Fort Worth

A new deep Ellenburger lime oil is indicated for southern Crane County at the Gulf 17 Waddell, 5 miles south of the Ellenburger production in the Sand Hills deep field and 7 miles due north of the Abell field of northern Pecos County. This wildcat more definitely than any in the past, tends to indicate the present trend of the deep, Lower Paleozoic production. The wildcat topped the Ellenburger lime several hundred feet high, structurally, at 5,584 ft. and tested 6,000,000 cu. ft. of gas and some high-gravity oil from 5,601 to 5,648 ft., total depth. Casing has been cemented and plug will be drilled for testing this week

ficial gage of 64 bbl. in 10½ hours, pumping. An offset test is now being planned by C. W. Brown, West Texas supply store operator, for the near future. Brown holds the W½ SE½ Section 37, and plans to start drilling within a few weeks. Production in the discovery was found from 1,123-27 ft. and 1,150-55 ft. in Blaine lime.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour ratings based on last 3 hours of 6-hour gage)

Crane County

Jordan field: Westex Oil 2-B University, 419 bbl., ½-in. choke, 300-qt. shot, 3,385-3,640 ft.

Crockett County

Noelke field: Moore Exploration and Olson Drilling 1 Noelke-State, 20 bbl. in 36 hr., naturally, 1,435-1,518 ft.

Ector County

Johnson field: M. L. Delaney 3-A Johnson, 1,219 bbl., 190-qt. shot, 4,050-4,125 ft.
Schermerhorn Oil 12-B Johnson, 705 bbl., open tubing, 720-qt. shot, 4,020-4,182 ft.
Foster field: Cities Service 14 Rhodes, 2,559 bbl., open tubing and casing, 340-qt. shot, 4,060-4,180 ft.
Forest Development 5-A Moss, dry at 4,335 ft.
Forest Development 4-A Moss, 498 bbl., open tubing, 600-qt. shot, 4,080-4,300 ft.
Goldsmith field: Gulf 337 Goldsmith, 1,454 bbl., open casing and tubing, 80-qt. shot, 4,116-86 ft.
Jordan field: Gulf 6-N State, 1,108 bbl., ¾-in. choke, 5,000 gal. acid, 3,572-3,600 ft.

Loving County

Wildcat: Sloan & Zook 1 Texas Pacific fee, Sec. 37, Blk. 56, Twp. 1s, T.&P. Sur., top Delaware lime 3,525 ft., top Delaware sand 3,562 ft., dry at 3,904 ft.

Pecos County

Masterson field: Childress Royalty Co. 14 Masterson, abandoned location.
White & Baker field: Cheyenne Pet. 1-A White & Baker, 48 bbl., 60-qt. shot, 2,070-97 ft.
Abell field: Magnolia 1 Baldwin, 162 bbl., ⅛-in. choke, 5,215-20 ft., top Yates 1,220 ft., Simpson 4,825 ft., Tulip Creek 4,910 ft.
Magnolia 1 Markey, 504 bbl., ¼-in. choke, 5,396-5,409 ft., top Yates 1,265 ft., Simpson 4,795 ft., Tulip Creek 5,075 ft.
Shearer field: W. H. Street 14 Shearer-Texas, dry at 1,901 ft.

Upton County

McCamey field: George Farley 3-A Shell-Estes, old total depth 2,261 ft., deepened to 2,324 ft., new initial 13 bbl., pumping.
Shell 15 Bowen, old total depth 2,126 ft., deepened to 2,186 ft., new initial 143 bbl., pumping.
McElroy field: Gulf 47 Crier-McElroy, 507 bbl., open casing 702-qt. shot, 2,628-2,841 ft.
Gulf 49 Crier McElroy, 2,137 bbl., open casing, 551-qt. shot, 2,745-2,892 ft.
Gulf 239 McElroy, 403 bbl., open casing, 830-qt. shot, 2,895-3,165 ft.

Ward County

Estes field: Gulf 143 Estes, 617 bbl., open casing, 320-qt. shot, 2,557-2,665 ft.
Hutchins field: Gulf 153 Hutchins, 246 bbl., ¾-in. choke, 320-qt. shot, 2,710-2,800 ft.
O'Brien field: Gulf 160 O'Brien, 417 bbl., open casing, 180-qt. shot, 2,676-2,769 ft.

Winkler County

Keystone field: Gulf 40 Keystone, 369 bbl., open casing, 586-qt. shot, 3,310-3,470 ft.

SOUTHERN WEST TEXAS WILDCAT REPORT

Crane County

Gulf 1-F University, SE SE Sec. 22, Blk. 31, University Sur., drilling 10,024 ft.
Gulf 17 Waddell, Sec. 13, Blk. 3, H.&T.C. Sur., 4 mi. S of Sand Hills field, drilled saturation 5,601-48 ft., tested 6,000,000 cu. ft. gas and show oil, cemented casing 5,635 ft.
Eastham & Russell 1 McClintic, NE NE Sec. 210, Blk. F, C.C.S.D.&R.G.N.G. Sur., drilling 2,675 ft.

Crockett County

George T. Morris 1 Brock Hoover, SW SE Sec. 99, Blk. 1, I.&G.N. Sur., 2,000-ft. test, correction, drilling 975 ft.

Pecos County

Culbertson & Irwin 1 R. G. Heiner, NE NE Sec. 589, G.C.S.F. Sur., Ordovician wildcat, show oil in upper Ellenburger lime, show oil 5,382-90 ft. and 5,500-10 ft., T.D. 5,665 ft., P.B. 5,509 ft., flowed 36 bbl. oil per day for 3 days, shut in.
Stanolind 1 Conry-Davis, SW SW SW Sec. 31, Blk. 9, H.&G.N. Sur., Ordovician test in Abell area, drilling 2,280 ft.
O'Quinn 2 O'Neil, S½ Sec. 74, Blk. 10, H.&G.N. Sur., Ordovician test, location.
Sinclair Prairie 1 Grove, Lot 9, Sec. 26, Blk. 9, H.&G.N. Sur., Ordovician test, surface casing 307 ft.
Richards 1 Robbins, NW NW Sec. 68, Blk. 10, H.&G.N. Sur., location.

Reagan County

H. Schooler 1 R. A. Wolters, NE NE Sec. 51, G.C.&S.F. Sur., setting 8¼-in. casing 1,000 ft.

Reeves County

C. A. Kitsos 1 A. B. Burchard, SW Sec. 7, Blk. 58, P.S.L. Sur., Delaware test, drilling 225 ft.
Roy Johnson 1 Perkins, Sec. 18, Blk. 7-C, P.S.L. Sur., S.D. 3,355 ft.
J. T. Pemberton 1 fee, NE NE Sec. 2, Blk. 55, Twp. 7, T.&P. Sur., Delaware lime test, 7,500 ft., preparing to start.

Upton County

H. C. Wheeler 1 Kincaid, 2,173 ft. from N, 467 ft. from E lines, Sec. 1, G.C.&S.F. Sur., location.
Pittman & Atkins 1 Fowler-Starnes, NW NE Sec. 89, G.C.&S.F. Sur., 3,500-ft. test, spudded.

Ward County

Gulf 6 Wristen, 1,997 ft. from SE and 1,989 ft. from NE lines, Sec. 18, Blk. 5, H.&T.C. Sur., drilling 5,480 ft.
Roeser & Pendleton, Inc., and Merry Bros. & Perini 1 Bird Hayes, 467 ft. from SE and SW lines, Sec. 164, Blk. 34, H.&T.C. Sur., ¼ mi. N of discovery gas well, top saturation in Delaware sand 5,089 ft., T.D. 5,396 ft., P.B. 5,130 ft., shot 5,085-5,130 ft., no results, prepare to quit as failure.

Winkler County

Stanolind and Westbrook 1 Maracaibo, NW NW Sec. 19, Blk. 26, P.S.L. Sur., 2½ mi. NW of Hendricks field, P.B. 2,722 ft., set whipstock, twisted off D.S. in drilling out, P.B. to 1,600 ft. and set another whipstock, preparing to drill ahead in sidetracked hole.

NORTHERN WEST TEXAS

Wildcat activity in Hale and Borden counties, together with the staking of a north outpost to the Slaughter field of Hockley County, were the main developments in the northern part of the West Texas area.

Hale County's deep wildcat, first announced about 2 weeks ago, is definitely going to be drilled, the contract having been let the past week. It is to be Humble-Stanolind-Standard Oil of Texas 1 A. F. Byrd, 660 ft. from the south and east lines of the north 300 acres of Section 17, Block K, T.T. Survey, 2½ miles northeast of Petersburg. Olson Drilling Co., Tulsa, has the contract and will move in heavy rotary rig within a few days. Humble Oil & Refining Co. will have charge of the drilling. This is believed the first time that three Standard Oil Co. units have joined in the drilling of one test. The contract depth is set at 9,000 ft. and all companies sharing in the expense of the test hold as much as 6,000 to 11,000 acres around the drill site.

In Borden County B. C. Mann and J. R. Canning have let contract for a wildcat test on the Canning and Dennis Brothers ranch in the NW NE Section 151, Block 25, H.&T.C. Survey, about 7 miles northwest of production in the Sharon Ridge field of Scurry County. The contract depth is 3,000 ft. It was announced several weeks ago that another Borden County wildcat would be drilled about 6½ miles north of the Mann and Canning location of this week. It was to be by

(Continued on Page 90)

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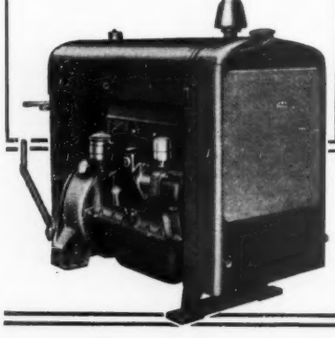

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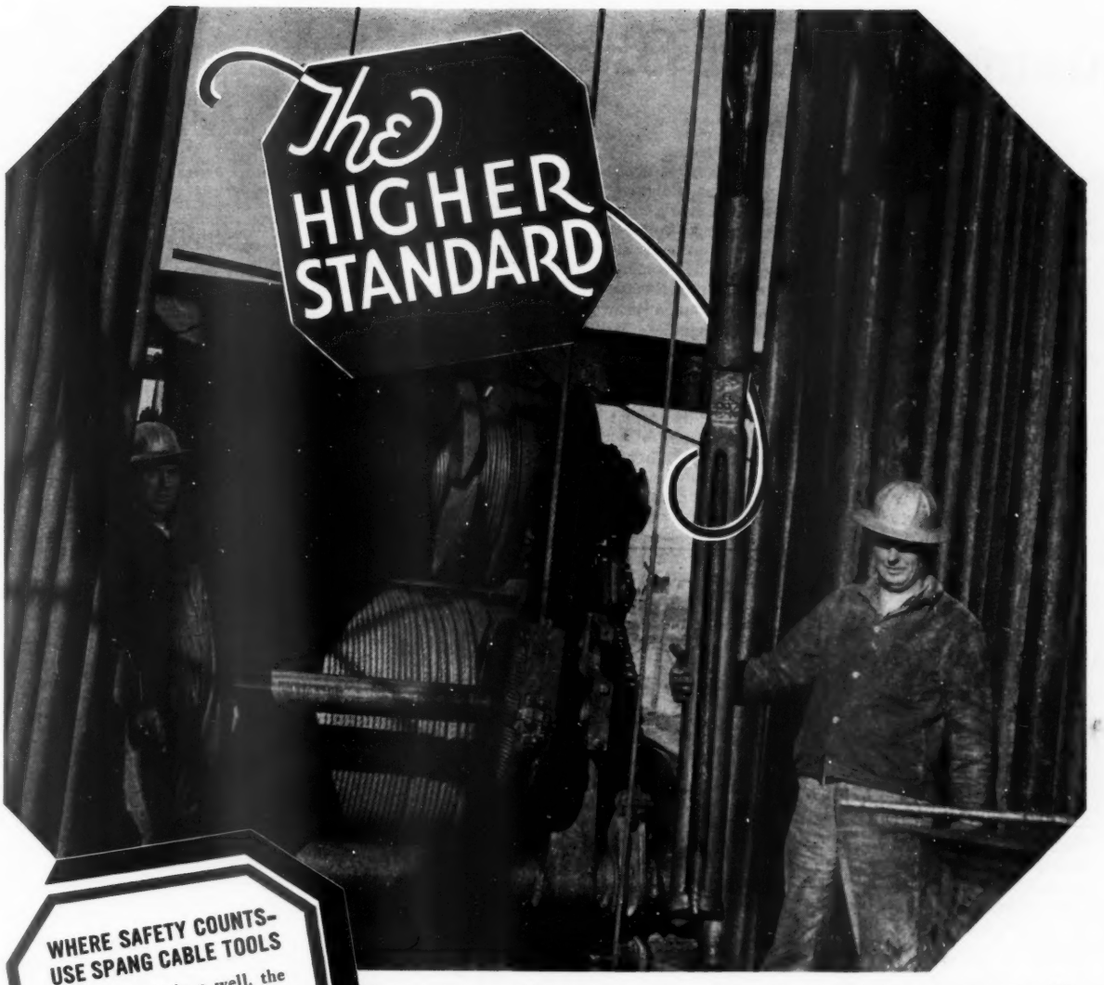

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LOUISIANA GULF COAST

New Sand Found in West Bay; Plaquemines Tests Show Oil

By F. L. SINGLETON

NEW ORLEANS, La., Mar. 17.—A new-sand discovery in the West Bay field, Plaquemines Parish, reported showings of oil, gas in two wildcats in Plaquemines Parish, and a scheduled production test of an important deep test on the southeast flank of the Edgerly dome, Calcasieu Parish, were the highlights of development in the Louisiana Gulf Coast.

The new-sand discovery is Tide Water 1 State, north of the discovery well of the West Bay field, Plaquemines Parish, which was completed for an initial production of 130 bbl. per day through a ⅛-in. choke from perforated casing at 6,262-74 ft. The new sand is approximately 1,000 ft. higher than the 7,200-ft. discovery Miocene sand which was found to be faulted out, and the well was completed at the present depth after a drill-stem test at 7,318-23 ft. recovered oily mud and salt water.

Although not confirmed, two wildcats being drilled simultaneously in Plaquemines Parish by the Texas Co. are reported to have cored sand showing oil and gas capable of producing in commercial quantities. The most advanced test is 1 State-Octave Pass which is bottomed at 11,042 ft., where 7⅝-in. casing was cemented. Approximately 60 ft. of net oil sand in a broken section was logged. Location is in 32-20s-20e. The company's 1 State-Delacroix, 34-15s-15e, is drilling in shale below 9,740 ft. with several sands showing oil logged above that depth.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil: Fields	12	3,647	99,735
Gas wells: Fields	1	.....	8,929
Dry holes: Fields	3	.....	14,296
Wildcats	2	.....	18,905
Total	18	.....	141,865

Gulf Refining Co. et al 1 Miller, a deep test on the southeast flank of the Edgerly dome, Calcasieu Parish, was being prepared for a production test as 7-in. casing was cemented in a sidetracked hole at 7,507 ft. Total depth is 7,510 ft. This well has attracted considerable attention within recent weeks due to excessive gas pressures which have prevented a successful production test and resulted in the hole being plugged back twice for sidetracking. Successful completion of the well would open the first deep-sand production around the flanks of the structure.

On the north flank of the Section 28 dome, St. Martin Parish, and offsetting the discovery well which was completed last year, Superior Oil Co. 1-B St. Martin Land Co. is bottomed at 10,252 ft., and 4½-in. casing was cemented for testing at 10,250 ft. Total depth of the hole is 10,527 ft. where drilling was halted due to mechanical trouble. Sand showing gas distillate was logged in the discovery pay at approximately 9,300 ft., and an electrical survey and side-wall cores are reported to have shown possible production in sand at 10,052-94 ft. which showed 10 ohms resistivity, and 6 ohms resistivity on normal curve at 10,151-57 ft.

Another flank test which is attracting attention is Gulf 1 Petit Anse Co., on the Avery Island salt dome, Iberia Parish. This well is drilling in shale below 11,790 ft. A sandy section at 11,158-67 ft., logged by an electrical survey, showed 35 millivolts porosity and 3½ ohms resistivity, while sand at 11,186-11,200 ft. showed 30 millivolts porosity and 4 ohms resistivity. Avery Island is one of the oldest known salt structures in the district, and the present test is the second deep test, being a short distance from a dry hole drilled by Texas Co.

Exploration around another old salt-dome structure was recently started by the Texas Co. at Cote Blanche in St. Mary Parish. The well is 2 State, now drilling in salt at 2,042 ft. which was topped at 1,909 ft. Cote Blanche is one of a group of salt-dome structures known as the "Five Islands" extending southeastward through Iberia and St. Mary Island. Included in this group are Jefferson Island, Avery Island, Weeks Island and Belle Isle. With the exception of Jefferson Island, all are nonproductive. Sun Oil Co. was scheduled to test 1 Belle Isle Corp., at the Belle Isle, now bottomed in a sidetracked hole at 10,043 ft. Seven-inch casing was cemented after sand was logged at 9,832-97 ft. carrying a showing of oil and gas.

On the south flank of the Gueydan dome, Vermilion Parish, Fohs Oil Co. 3 Mulvey Irrigation Co. is bottomed in salt at 7,699 ft., and the hole is being plugged back to sidetrack. Top of the salt was 7,614 ft. This well is about 700 ft. northeast of 2 Mulvey, one of the two producing wells which established deep flank production on the structure several months ago. As a result of this development three other operations are listed for this area. They are Fohs 4 Mulvey drilling below 2,640 ft., Pure 7 Alliance Trust Co., and Union Sulphur 1 J. B. Baker which is coring for the pay below 9,242 ft.

Titanic 1 Marrero Land & Investment Co., completed shortly after the first of the year as the discovery well of the Westwego area, just west of New Orleans, Jefferson Parish, has been abandoned due to mechanical trouble which developed while testing a new sand. The well was originally completed in sand at 9,830-42 ft., but due to salt-water encroachment, the flow was killed. The company was testing a deeper sand when the casing collapsed. Interest in this area is now centered on Reese Carter 1 Cravens, ¼ mile east of the Titanic well which is shut down to condition mud after the well attempted to blow out at a total depth of 9,686 ft. The well started kicking when the drill pipe was out of the hole. When one joint of drill pipe had been lowered and the blowout preventer closed, the well flowed a small stream of mud with a showing of oil.

Humble Oil & Refining Co. is moving rig from the Cypremort prospect in St. Mary Parish where 1-C Miami Corp. was abandoned, to the Bayou Sale prospect in the same parish where location was made for 1 Martin in 16-16s-9e, several miles north of the Horseshoe Bayou field. Bayou Sale has been worked extensively with geophysical instruments, and 1 Martin will be the first test to be drilled on the structure.

LOUISIANA GULF COAST COMPLETIONS

Acadia Parish

South Crowley field: Humble 1 Jeffers, gas well, perf. casing 6,968-74 ft., T.D. 8,929 ft.

Calcasieu Parish

Gillis field: Union Sulphur 10 Kaufman, 22 bbl., 10/64-in. choke, perf. casing 6,951-57 ft., T.D. 7,030 ft.

Cameron Parish

Chalkley field: Shell 4 Sweet Lake Land & Oil Co., 263 bbl., 10/64-in. choke, perf. casing 8,804-35 ft., T.D. 8,916 ft.

East Baton Rouge Parish

University field: Sugarfield 4 McDonald, 41 bbl., 10/64-in. choke, perf. casing 7,217-32 ft., T.D. 7,232 ft.

Evangeline Parish

Villa Platte field: Continental 1 Albert Tate, 198 bbl., ⅛-in. choke, perf. casing 10,163-75 ft., T.D. 10,259 ft.

(Continued on Page 95)

Permian Basin, Panhandle

(Continued from Page 88)

M. L. Richards, Big Spring, and was 1 Hale, SW SW Section 309, Block 97, H.&T.C. Survey. It has not been further reported whether this test will be drilled.

Magnolia Petroleum Co. has staked a new north outpost to the Slaughter field of Hockley County with 4 Woodley, ¼ mile north of the company's 3 Woodley, now in the completion stages. No. 3 is, itself, slightly more than a ¼-mile north extension to the field. The new location is 590 ft. from the north and east lines of Lot 1, League 57, Oldham County School Lands Survey. The Woodley area, in which Magnolia has two completed wells, is 1½ miles north of the main body of the Slaughter field.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour ratings based on last 3 hours of 6-hour gage)

Andrews County

North Cowden field: Atlantic and Sun 2-B Holt, 589 bbl., open tubing, 540-qt. shot, 4,445-4,520 ft.

Cochran County

Slaughter field: Honolulu Oil 1-18 Igoe & Smith, 466 bbl., open tubing, 8,000 gal. acid, 5,010-59 ft.
Magnolia 3-H Mallett, 1,203 bbl., 3-in. casing outlet, 10,500 gal. acid, 5,000-58 ft.
Mid-Continent 2-A Mallett, 730 bbl., ¾-in. choke, 11,000 gal. acid, 5,009-59 ft.
Milhoan Prod. 1 Duggan, junked and quit at 5,012 ft., T.D.

Gaines County

Seminole field: Amerada 3 Blakemore, 728 bbl., ½-in. choke, naturally, 5,140-5,340 ft.
Amerada 4 Coffey, 806 bbl., ½-in. choke, 2,000 gal. acid, 5,166-5,230 ft.
Magnolia and Atlantic 11-195 H. & J., 411 bbl., ½-in. choke, 4,500 gal. acid, 5,115-5,240 ft.
Magnolia and Atlantic 7-221 H. & J., 227 bbl., ½-in. choke, naturally, 5,185-5,255 ft.
Ohio Oil 7 Gibbs, 689 bbl., ½-in. choke, 2,000 gal. acid, 5,152-5,319 ft.

Hockley County

Slaughter field: Awoeb Oil 3-A Mid-Seale, 502 bbl., 2-in. casing outlet, 9,000 gal. acid, 4,905-5,010 ft.
Devonian Oil 3 Citizens Natl. Bank, 952 bbl., 3-in. casing outlet, 10,700 gal. acid, 4,916-5,001 ft.
Fain & Riner 2 Soash, 444 bbl., open tubing, 10,000 gal. acid, 4,880-4,967 ft.
Honolulu Oil 3-3-52 Mallett, 677 bbl., open tubing, 7,500 gal. acid, 5,000-5,052 ft.
Magnolia 2 Slaughter, 724 bbl., 3-in. casing outlet, 10,500 gal. acid, 4,845-4,978 ft.
W. J. Richardson 1 Allison, 731 bbl., open casing, 10,000 gal. acid, 4,890-4,992 ft.
Stanolind 11-A Slaughter, 1,350 bbl., 2-in. casing outlet, 8,000 gal. acid, 4,970-5,061 ft.
Tide Water 3 Lincoln, 1,237 bbl., open casing, 9,000 gal. acid, 4,892-4,995 ft.
Western States Gasoline Co. 6 Frazier, 1,463 bbl., open casing, 9,000 gal. acid, 4,986-5,025 ft.

King County

Wildcat: Cannon & Cunningham 1 Thorman, W. E. Browder Sur., dry at 2,303 ft.

Scurry County

Sharon Ridge field: Pearson & Sibert Oil 1 Burney, 202 bbl., pumping, 710-qt. shot, 2,195-2,500 ft.

Yoakum County

Wasson field: Denver Prod. & Refg. 25 Whittenburg, 922 bbl., open tubing, 10,000 gal. acid, 4,820-5,132 ft.
Gulf 3 Moore, 928 bbl., 11/64-in. choke, 8,000 gal. acid, 5,036-56 ft.

NORTHERN WEST TEXAS WILDCAT REPORT

Andrews County

Phillips 1 University-Drews, NW NE Sec. 32, Blk. 10, University Lands Sur., drilling 6,210 ft.
Furham Pet. 1 Lockhart-Brown, Sec. 24, Blk. 42-A, P.S.L. Sur., top solid lime 4,155 ft., T.D. 5,600 ft., P.B. 4,558 ft., treated 1,000 gal. acid, S.D.

Cochran County

Rhoades and Atlantic 1 Dean, C NE Tr. 4, Lge. 89, Lipscomb P.S.L., T.D. 5,150 ft., P.B. 5,112 ft., treated with 1,000 gal. acid, 210-qt. shot, P.B. to 5,099 ft., retreated 5,000 gal. acid; testing on pump, making 4 bbl. oil in 8 hr.
George Livermore 1 Wright, old well drilling deeper, old T.D. 4,997 ft., contracted to Ordovician, drilling 6,407 ft.

Gaines County

Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., logged new pay about 6,610 ft., tight well, application filed to drill to 11,000 ft., S.D. 10,078 ft. (corrected).

Hale County

Humble 1 Byrd, SE SE NE Sec. 17, Blk. K. T.T.R.R. Sur., 9,000-ft. test, location.

Hockley County

Magnolia 1 M. Wilson, SW cor. Labor 8, Lge. 41, Maverick C.S.L. Sur., 1½ mi. N of production in Slaughter field, drilled broken oil shows 4,850-70 ft., preparing to core ahead.

Lubbock County

A. L. Henderson 1 W. D. McMillan, SE NW Sec. 4, Blk. 2-D, H.E.&W.T. Sur., location.

Martin County

Magnolia 1 N. D. Teague, NW NW Lab. 10, Lge. 260, Borden C.S.L. Sur., 5,500-ft. test, drilling 4,687 ft.

Mitchell County

Peck & Croft 1 Jack Smith, 2,173 ft. from N and W lines, Sec. 19, Blk. 26, T.&P. Sur., T.D. 3,225 ft., prepare to quit as failure.
C. E. Casebolt 1 J. E. Franklin, NE NE NW Sec. 50, Blk. 27, T.&P. Sur., S.D. 55 ft., repairs.

Yoakum County

George Livermore 1 Ownby, NE NE NE Sec. 502, Blk. D, Gibson Sur., drilled broken saturation 5,237-85 ft., flowed several heads oil, treated 3,500 gal. acid, flowed 121 bbl. daily, T.D. 5,294 ft., shut in.

TEXAS PANHANDLE

AMARILLO, Tex., Mar. 17.—Another deep wildcat test will be drilled just outside of the city of Amarillo, less than 50 ft. northeast of the old Les Whitaker test on the Dan Pavillard land which never finished its contract depth after being started about a year ago.

The new wildcat is R. & J. Drilling Co. 2 Old Tack,

located in Section 101, Block 2, A.B.&M. Survey. The same water well and pits used on 1 Old Tack will be used for the new operation. The company has a 7,000-acre block and plans to carry the wildcat to 4,500 ft.

Completions in the Panhandle district totaled seven, consisting of six oil producers and one failure.

TEXAS PANHANDLE COMPLETIONS

(24-hr. pumping gages)

Carson County

Magnolia 98 fee (244), 13 bbl. daily, 200-qt. shot, 2,905-65 ft.

Gray County

Southern Pet. Exploration 14 Vaughan, 188 bbl., 220-qt. shot, 3,130-3,220 ft.
Magnolia 2 Hood, 242 bbl., 340-qt. shot, 3,035-3,105 ft., T.D. 3,115 ft.
Hobbs 1 Davidson, abandoned after shot in pay collapsed casing, T.D. 3,015 ft.

Hutchinson County

Cree & Hoover 8 Harvey, 153 bbl., 190-qt. shot, 2,990-3,041 ft.
Phillips 11 Haile, 170 bbl., 260-qt. shot, 3,000-72 ft.
Shell 14 Harvey B, 286 bbl., 175-qt. shot, 2,992-3,057 ft.

Moore County

Red River Gas 4-A Shelton, 82,000,000 cu. ft. daily, granite wash pay, T.D. 2,490 ft.

SOUTHEAST NEW MEXICO

HOBBS, N. M., Mar. 17.—There were three new exploratory tests staked during the past week, all in Eddy County. An Eddy County wildcat continued to test large volumes of gas, while in Lea County the possibility was seen that an old failure would be rigged up for deepening, possibly to 9,000 ft.

Olen F. Featherstone staked one of the Eddy County locations, the operator only last week having quit a wildcat test on the Merchant tract west of Lake McMillan in Eddy County. The new operation is 1 Johnson, SW SW 10-19-27, about 2 miles east of Lake McMillan.

About 1½ miles east of Lake McMillan and only ½ mile west of the Featherstone location, J. H. Rives and associates have located 1 Boulter, 300 ft. from the south and west lines of 21-19-27.

Basin Oil has located 1 Kimmell 2½ miles west of the south end of the lake in NE NE NE 5-20-26. It is contracted to 1,620 ft. and is drilling below 200 ft.

Six miles west of the Getty field in Eddy County the W. A. Suddreth 1 Willis, wildcat gas discovery of a week ago, is still making increasing volumes of gas as small string of casing is being set at 638 ft. The wildcat encountered 7,000,000 cu. ft. of gas daily in sand from 778-83 ft. The test was reported at the close of the week to be making nearly 11,000,000 cu. ft. of gas daily.

SOUTHEAST NEW MEXICO COMPLETIONS

Eddy County

Jackson field: Emperor Oil 8-A Puckett, NW SW 24-17-31, flowed 100 bbl. daily, natural, open tubing, 3,454-3,898 ft.
Grayburg field: Aston & Fair 1-H McIntyre, NW SW 21-17-30, made 1,000,000 cu. ft. gas daily, natural, 1,677-1,801 ft.

Lea County

Maljamar field: A. N. Hover 1 State, NE NE 32-17-32, flowed 200 bbl. daily, open tubing, 300-qt. shot, 3,817-3,955 ft.
Maljamar Oil & Gas 8-B Mitchell, SW SW 20-17-32, flowed 80 bbl. in 8 hr., open casing, natural, 3,580-3,808 ft.
Vacuum field: Cities Service Oil 4-K State, NE NE 27-17-35, flowed 6 bbl. hourly, open casing, 500-qt. shot, 4,375-4,625 ft.

SOUTHEAST NEW MEXICO WILDCAT REPORT

Chaves County

L. E. Elliott 1 State ..... NW NE 16-11-31
Drilling 3,165 ft.
Roxana Oil 1 Maull ..... NE NW 11-12-25
Setting 8¼-in. at 624 ft., last report.
A. F. Pierce 1 Franks ..... SE NW NW 17-9-5
T.D. 990 ft., P.B. 887 ft., shot 40 qt. 864-87 ft., testing.
Holmes-Martin 1 Stephens ..... C NW NE 22-15-29
Old well drilling deeper, T.D. 3,210 ft.
H. Steinberger 1 Headley ..... NW SW 26-14s-29e
T.D. 3,405 ft., sulfur water 3,400-5 ft.
R. T. Wilson 1 L. B. Brown ..... C NW SW 29-11-23
T.D. 890 ft., last report.

Eddy County

Harry W. Long 1 Anderson ..... N½ 16-22-20
Location.
G. M. Cone 1 Hare ..... NW NW NE 11-16-28
Old well drilling deeper, T.D. 1,830 ft., showing est. 250,000 cu. ft. daily, testing.
Mac T. Anderson 1 Brainard ..... NE NE 28-18-27
T.D. 2,415 ft., last report.
Jack Harris 1 Josey ..... SW SE 19-20-23
T.D. 643 ft.
Jones & Yates 1 Everest ..... NE SE 15-18-26
270-qt. shot 1,934-84 ft., and 670-qt. shot 14,85-1,710 ft., set new casing, still testing.
Olen F. Featherstone 1 Johnson ..... SW SW 10-19-27
First report.
J. H. Rives 1 Boulter ..... SW SW SW 21-19-27
First report.
Basin Oil 1 Kimmell ..... NE NE NE 5-20-26
1,620-ft. test, drilling 200 ft.
W. A. Suddreth 1 N. H. Wills, 6 mi. W of Getty field, NW SE 14-20-28, gas sand 778-83 ft., tested 7,000,000 cu. ft. daily, trying to cement casing at 638 ft. after bradenhead blew off, gas volume increasing.

TEXAS GULF COAST

Second Well on Double Gum Prospect Ready For Test

By NEIL WILLIAMS

HOUSTON, Tex., Mar. 18.—Preparations were being made to test George Echols 2 Boyt, a wildcat in the Double Gum area, Liberty County, Texas, in Section 9, H.&T.C. Survey. The well was drilled to 8,757 ft., and 5½-in. casing was cemented at 8,666 ft., following an electrical survey which showed possible production in two sand sections. From 8,570-80 ft., the survey showed 2½ ohms resistivity and 40 mv. porosity, while from 8,605-8,611 ft., 2 ohms resistivity and 20 mv. porosity was recorded. The survey was confirmed by side-wall cores cut at intervals from 8,571-8,609 ft. This is the second well to be drilled on the prospect by the operator and is about 2,100 ft. east of 1 Boyt, a dry hole in which sufficient showings were logged to set casing for a production test.

Prospects of opening another submerged field, offshore from Jefferson County in the Gulf of Mexico, were considered bright as a string of 9⅝-in. casing was being cemented in British American Oil Producing Co. 2-71 State. Hole is bottomed at 6,721 ft. One foot of sand with an oil show was recovered in a core at 6,550-60 ft., while electrical surveys and side-wall cores are reported to have revealed additional showings up the hole. A production test is expected to be made of these showings and unless they prove productive, the size of casing indicates that the hole will be drilled deeper. This area which has been looked upon as a favorable prospect for a number of years is about 6½ miles southwest of Sabine Pass.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	17	5,146	129,502
Gas wells: Fields	1	.....	6,500
Dry holes: Fields	4	.....	32,256
Wildcats	1	.....	5,515
Total	23	.....	174,773

Republic 1 F. P. Elliott, about 1¼ miles southwest of the Silsbee field, Hardin County, is attracting attention as it cores below 7,003 ft. The Eponides Yeguaensis was topped at 6,989-90 ft. Following a 40-minute drill-stem test in the Cockfield sand at 6,850-63 ft., which tested 185 lb. working pressure, the well started flowing pipe-line oil in 20 minutes after the tool was opened. The well flowed for 22 minutes and then started making salt water. The latter section corresponds with the upper Cockfield pay in the field proper. The well may be drilled to the Wilcox before another test is made of the 6,800-ft. horizon.

The newly opened Chenango field, Brazoria County, was defined to the south with the abandonment of J. Newton Rayzor 2 Christian which was quit at a total depth of 8,587 ft. Slight oil showings were logged in the discovery pay at 8,576-82 ft. The abandonment came as a surprise as it was generally believed that the discovery well was on the north edge of the structure. Interest in the area was immediately shifted to the same operator's 3 Christian which is being drilled 1,320 ft. due east of the discovery. Another abandonment was marked up for a comparatively new field as Humble 4 Hubbard, Rowan field, 1,700 ft. southeast of production, was quit at 9,119 ft.

In the Chocolate Bayou area, Brazoria County, Phillips Petroleum Co. was preparing to test 1 Triangle Development Co., an important outpost well 1 mile east of the company's 1 Andrau. The hole is bottomed in a sidetracked hole at 11,861 ft. Liner was set at 11,675 ft., and sealed in the 7-in. liner at 11,214 ft. An electrical survey is reported to have logged several sand sections below 10,000 ft.

In the Red Fish Reef field, offshore from Chambers County in Galveston Bay, Humble Oil & Refining Co. has cemented casing on 5-A-265 State, about 1 mile southwest of the company's 2-A-265 State, a gas-distillate producer. The hole is bottomed at 11,008 ft., and 5½-in. casing was cemented at 11,005 ft. Offsetting the discovery well, Gulf 1-R-224 State is shut in for connections after flowing gas and a small amount of distillate through a ⅞-in. choke from perforated casing at 8,701-05 ft. Total depth is 11,000 ft. The well was completed in the 8,700-ft. horizon after several tests below 10,000 ft. showed gas and salt water.

Wildcatting and leasing activity throughout the district continues to gain momentum, and all indications point to an active exploration campaign during the remainder of the year. There were four new wildcat locations announced during the week. In the Lakeview area, Wharton County, W. R. Davis & Co. is scheduled to move in material for 1 Hartman in the I.&G.N. Survey, Section 10. In the Needville area, Fort Bend County, J. G. Mayo et al are rigging up 1 G. W. Armstrong in the James Scott Survey. In Jefferson County location for a Frio sand test was made by Humble for 1 Dr. William C. Baird in the B. F. Howard Survey.

Along the Wilcox trend in Lavaca County, Shell Oil Co., Inc., announced location for 1 McManus in the Delmas Survey. Interest in this area has been increased by the recent opening of Wilcox production in the Viena area in the southern part of the county. The company controls several thousand acres in the area which were leased on the strength of geophysical exploration. Approximately ½ mile southwest of the Lake Creek field, Montgomery County, Superior Oil Co. is moving in material for 2 McWhorter in the T. J. Nichols Survey, a projected 9,000-ft. well. Production from the Wilcox sand was recently opened by the company's 1 McWhorter, completed at 9,212-17 ft.

TEXAS GULF COAST COMPLETIONS

Brazoria County

Chenango field: J. Newton Rayzor 2 Christian, dry, T.D. 8,589 ft.
Old Ocean field: Shell 1 Reynolds, 421 bbl., ¼-in. choke, top sand 10,799 ft., T.D. 10,800 ft.
Stanolind 2 Chenault-Smith, 452 bbl., plus 2.8 per cent basic sediment and salt water, ¼-in. choke, perf. casing 10,096-10,115 ft., 10,120-42 ft., T.D. 10,850 ft.
Tide Water 1 Bailey, 145 bbl., ¼-in. choke, perf. casing 10,074-10,110 ft., T.D. 10,488 ft.
Rowan field: Humble 4 Hubbard, dry, T.D. 9,119 ft.

Chambers County

Anahuac field: Gulf 14 W. T. Knowles, 389 bbl., ¼-in. choke, perf. casing 7,081-7,106 ft., T.D. 7,111 ft.
Red Fish Reef field: Humble 8-A-223 State, 57 bbl., ⅛-in. choke, perf. casing 9,315-19 ft., T.D. 10,924 ft.

Galveston County

League City field: Phillips 1 Herrick, 338 bbl., ¼-in. choke, perf. casing 10,620-25 ft., T.D. 11,402 ft.

Harris County

Fairbanks field: Stanolind 14 Jahnke, 150 bbl., ⅛-in. choke, top sand 6,810 ft., T.D. 6,389 ft.
Humble field: Wilson 5 Holmes, 153 bbl., pumping, top sand 1,088 ft., T.D. 1,108 ft.

Jackson County

Lolita field: Blutch Oil Co. 2 Robertson, 127 bbl., ¼-in. choke, perf. casing 5,288-97 ft., T.D. 5,300 ft.
Magnolia 12 Mitchell, 210 bbl., 10/64-in. choke, sand 5,280-85 ft., T.D.
Magnolia 13 Mitchell, 221 bbl., 11/64-in. choke, sand 5,286-90 ft., T.D.
La Ward field: Humble 2-B Mauritz, 528 bbl., ¼-in. choke, sand 5,219-28 ft., T.D. 5,288 ft.
West Ranch field: Magnolia 1 Schuech, gas well, perf. casing 5,460-66 ft., T.D. 6,500 ft.

Jefferson County

Fannett field: Gulf 13 Burrell, dry, T.D. 6,791 ft.
Lovells Lake field: Humble 19 Jefferson Land Co., 8 bbl. distillate, ¼-in. choke, perf. casing 7,717-22 ft., T.D. 7,724 ft.

Liberty County

Esperson field: General Crude 25 Davis, gas-distillate, T.D. 7,991 ft.
General Crude 20 Davis, 676 bbl., ¼-in. choke, perf. casing 6,015-70 ft., T.D. 9,734 ft.
General Crude 41 Esperson, 676 bbl., ¼-in. choke, perf. casing 8,000-15 ft., 7,970-85 ft., 7,945-60 ft., T.D. 8,061 ft.

Polk County

Segno field: Gulf 44 Wing, 498 bbl., ¼-in. choke, sand 8,130-49 ft., T.D. 8,158 ft.

Wharton County

Humble 37 Cockburn, 97 bbl., ¼-in. choke, sand 5,538-40 ft., T.D.

(Continued on Page 95)

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Among the Drilling

ROY BARKER, Pampa, Tex., has been awarded contract for a wildcat test northeast of Amarillo in Potter County, Texas.

PARKER Drilling Co., Houston, Tex., has cemented 9⅝-in. casing on an interesting wildcat located offshore from Jefferson County, Texas, in the Gulf of Mexico. The well is being drilled for the British American Oil Producing Co. on state Tract 71, and the well is bottomed at 6,721 ft., where casing is cemented. Several sands with possible oil and gas shows are reported to have been logged.

SHARON Drilling Co. has completed a new discovery in the Bowman field, northwest of Chase in western Rice County, Kansas. The well, 1 Nevins, SW SW NE 21-19-10w, 1 mile north of the Silica field, gaged 68 bbl. daily on a swabbing test, following acidization. The well is bottomed in Arbuckle dolomite at 3,295 ft.

LOFFLAND BROTHERS, Houston, Tex., have apparently opened a major extension to the new Willamar field, Willacy County, Texas, as Pan American Production Co. 1 Kent, about 1½ miles northwest of the discovery well, flowed a small amount of oil with an estimated 3,000,000 cu. ft. of gas while testing through perforated casing at intervals from 7,800 to 7,970 ft. In the Chenango area, Brazoria County, 2 Christian, a south offset to the discovery well, was abandoned, and the rig is being moved 1,320 ft. east for 3 Christian.

HOUSH & THOMPSON Drilling Co., Houston, Tex., has cemented 7-in. casing in Gulf 1 Miller, a deep test on the southeast flank of the Edgerly field, Calcasieu Parish, Louisiana. The well is bottomed in a sidetracked hole at 7,510 ft., and 7-in. casing was cemented at 7,507 ft.

GEORGE ECHOLS, Houston, Tex., was preparing to make a production test on 2 Boyt, a prospective pool opener on the Double Gum prospect, Liberty County, Texas. The hole is bottomed at 8,757 ft., and 7-in. casing was cemented on bottom. An electrical survey and side-wall cores are reported to have shown possible production in two sand sections at 8,500 ft. and 8,600 ft. In the Westwego area, Jefferson Parish, Louisiana, location for a second well was expected to be announced, while in the newly opened St. Gabriel field, Iberville Parish, drilling was started on a second well, while a third test was scheduled to be spudded within the next few weeks.

FALCON SEABOARD Drilling Co., Tulsa, has used 275 rock bits in drilling to 9,885 ft. for Hope Natural Gas Co. in the first rotary test in West Virginia. Plans are to explore the white Medina sand expected around 10,000 ft.

PORTABLE Drilling Co. and K.G. F.F. Oil Co. 1 Camp, east of the Dill field, Okfuskee County, Oklahoma, has been completed for 21,000,000 cu. ft. of gas and an ungaged volume of oil from perforations between 3,950 to 3,960 ft. Hole is bottomed at 4,008 ft.

A. E. WALKER, Big Spring, Tex., is rigging up on B. C. Mann 1 Canning-Reynolds, a wildcat test in Section 151, Block 25, H.&T.C. Survey, Borden County, Texas, 7 miles northwest of the Sharon Ridge field in Scurry County.

DELTA Drilling Co. plans to move a rotary from the Slaughter-Duggan area to a semiwildcat block of 5,000 acres assembled on the north side of the Cochran-Hockley counties producing field, where a test will be drilled for account of Tide Water Associated Oil Co. The new block centers about 5 miles southwest of Levelland.

SAWYER Drilling Co., Houston, Tex., is expected to move a rotary to Jim Hogg County, Texas, for a wildcat 3 miles northeast of Randado for a projected 3,200-ft. test.

A. W. WEST has been awarded contract by Continental Oil Co. for a Wilcox test on the George W. West ranch about midway between Kittie station and Oakville in Live Oak County, Texas.

MARTIN THOMPSON, Houston, Tex., received contract for John Mayo et al 1 G. W. Armstrong, a 6,500-ft. wildcat in the Needville area, Fort Bend County, Texas. The well is in the James Scott Survey.

LOMA Oil Co., San Antonio, Tex., contracting and operating firm, will soon have a new manager for Indiana and Illinois. Arthur P. Buzzini, who has been manager of operations in those two states, reported for active duty March 15 in the Second

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AJAX Drilling Co., Big Spring, Tex., has been dissolved by mutual consent of the partners, E. Fred Herschbach, John L. Herschbach and Dave Duncan. Duncan Drilling Co. has been organized by Mr. Duncan. The new firm is now conducting the business formerly handled by Ajax.

FALCON SEABOARD Drilling Co., Tulsa, proceeded below the previous wildcat-drilling-depth record in the Rio Grande, Tex., area last week on an operation for Pure Oil Co. The well was drilling below 10,350 ft. in southeastern Cameron County on the Gatewood Newberry fee. The previous Rio Grande depth record was established by Magnolia Petroleum Co. 1 Francisco Armendaiz in southwestern Willacy County, Texas, which was carried to 10,324 ft. in 1938.

GRADY VAUGHN, Dallas, Tex., received contract for Sinclair Prairie Oil Co. 1 Aragon Plantation, a projected deep test in the Lake Bourg area, southeast of the town of Houma in Terrebonne Parish, Louisiana.

NORBLA Drilling Co., Tulsa, will drill a wildcat for Carter Oil Co. in one of the known structures in Osage County, Oklahoma, which are described in a recent bulletin of the U. S. Geological Survey. The test is located 330 ft. from the south and west lines of SW 23-25-6.

L. B. THOMAS, Alice, Tex., has contract to drill a wildcat test in eastern Bexar County, Texas, for A. H. Ueckert. Mr. Thomas has another contract with operators in San Antonio, Tex., to drill a total of 40 wells in Bexar County.

T. P. PIKE Drilling Co., Los Angeles, is drilling at 6,798 ft. at Southern California Petroleum Corp. 1 Townsite, north and west of the Athens section of the Rosecrans field in the Los Angeles Basin, California.

HARRY L. EDWARDS Drilling Co., Houston, Tex., is starting a deep test in the Gillock area, Galveston County, Texas, for the Pan American Production Co. A Wilcox test is being drilled in Liberty County, Texas, for Dishman-Lucas et al, while at the Old Ocean field, Brazoria County, two operations are reported for Harrison & Abercrombie and Shell Oil Co., Inc. Another rotary is running at the Esperson field for General Crude Oil Co.

OLSEN Drilling Co., Tulsa, has contract for drilling a 9,000-ft. wildcat test in Hale County, West Texas, 2½ miles northeast of Petersburg on the A. F. Byrd fee. Contributors to the drilling operation are Humble Oil & Refining Co., Stanolind Oil & Gas Co. and Standard Oil Co. of Texas. The companies have under lease an aggregate of 26,000 acres.

MERCURY Drilling Co., Tulsa, has completed 2 Dick in the W½ NE 19-23s-3w, Harvey County, Kansas, for official potential of 358.74 bbl. daily.

BATEMAN Drilling Co. is cementing perforations in 1 Foster, a wildcat test drilled some time ago to 10,481 ft. in the South Franklin area of St. Mary Parish, Louisiana. When the squeeze job is completed the hole will be carried deeper.

WHITE EAGLE Drilling Co., associate of Helmerich & Payne, Tulsa, has started a wildcat operation for Donald Marr of Corsicana, Tex., and C. W. Williams, St. Louis, Mo., in the negro community of Cuney, 9 miles west of Jacksonville, Cherokee County, Texas.

LONGHORN Drilling Co., Three Rivers, Tex., has contract to drill Holland Oil Co. 1 Cartwright, a wildcat test in La Salle County, Texas, which may be carried to the Midway.

DELTA Drilling Co. has made location for a Travis Peak test in Caddo Parish, Louisiana, ½ mile north of its 1 Dunn, a recently completed discovery gas well near Greenwood, La. Arrangements for drilling the deep test were worked out with Gulf Oil Corp which donated several 80-acre tracts to Delta's original block.

E. M. SHIELDS, Mount Pleasant, Mich., has contract for two new operations by Socony-Vacuum Oil Co., Inc., in Michigan. One is in Allegan County and the other in Crystal Township, Montcalm County.

C. A. Tucker, drilling contractor, drilling for the Gulf Oil Co., in the Heyser field, Texas, recently completed 1,006 days without a lost-time accident. The rig runs four 6-hour crews, or 20 men to the rig per day. The average bottom hole is 5,500 ft. The accident-record board shown in the picture is retained permanently on the rig and the numerals are changed at the beginning of the graveyard tour by the driller. All men wear safety helmets, safety-toed shoes, and goggles whenever needed. Shown in the picture are: Driller R. C. Randolph and crew, G. G. Simmons, L. O. Norrell, T. L. Harper, L. N. Jones; second row: Driller C. A. Gajewsky and crew, Ernest Kay, T. W. Gordon, B. M. Campbell, W. I. Lucas; third row: Driller H. H. Caddel and crew, J. W. Douglass, R. S. Lamb, A. J. Spurrier, E. L. Woodell, not in picture, and C. A. Tucker, the drilling contractor; fourth row: M. C. Chamblee, driller, and crew, G. A. Dwyer, J. M. Sewell, H. I. Crowe, Jr., Jack Matthews, and Johnnie High, Gulf Oil Co. geologist; last row: C. L. Tucker, son of the drilling contractor, who is the toolpusher, and H. I. Crowe, Sr., Heyser district superintendent for the Gulf Oil Co.

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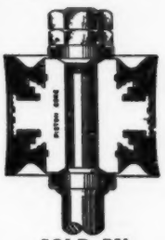

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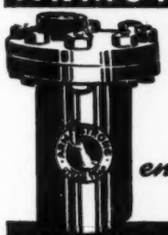

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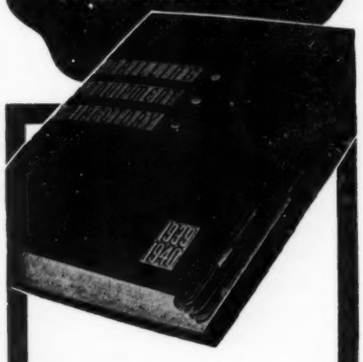

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Production and Drilling Hold Upward Trend; Pools Named

By
ROBERT INGRAM

CRUDE-OIL production for the state last week was up from the previous week to 206,450 bbl., and near the all-time high of 207,000 bbl. produced during the last week in February of this year. Thus the general upward trend of production continued. At the same time the number of active field operations showed a gain over last week to 307 wells drilling, located or rigs up. Meantime, to take stock of developments to date as if preparing for a big spring campaign, the nomenclature committee of the Kansas Geological Society met to recommend to the Mid-Continent Oil and Gas Association names for new pools opened between January 3 and March 3, last.

Two were recognized by the committee as new pools. They were the Gibson pool in Cowley County, opened at Sinclair Prairie 1 Gibson, SE SE NW 29-34-3e, and the High Spot pool in Ellis County, opened by Stearns Drilling 1 Witt, S½ NE SW 28-12-16w. The Gibson pool discovery was a comparatively small well and was given an initial potential of 90 bbl. daily. High Spot's discovery well, producing from the Lansing-Kansas City lime, was given a daily production of 647 bbl. initial.

The committee also discussed the status of the area opened last week by Tom C. Palmer 1 Neidenthal, W½ SW SE 23-14-15w, in southwestern Russell County, and decided it was not a new pool but was an extension to the Big Creek pool lying to the southeast. The Neidenthal pool lies to the northeast, each about ¾ mile distant. It appeared likely that Big Creek and Neidenthal might soon be joined.

SUMMARY OF COMPLETIONS

Kansas

	No.	Bbl.	Footage
Oil wells: Bemis-Shutts	1	3,000	3,440
Burnett	1	3,000	3,358
Geneseo	3	704	9,614
Hall-Gurney	2	3,435	5,785
Kraft	1	90	3,293
Stoltenberg	1	1,931	3,308
Zenith	1	348	3,755
Other fields	10	3,466	26,148
Wildcats	1	216	4,104
Gas wells: Fields	1	*1	1,126
Dry holes: Fields	2	.....	4,910
Wildcats	3	.....	11,028
Total	27	.....	79,869
Recompletions	2	73	.....

Nebraska

Wildcats	1	.....	1,300

*Million cu. ft.

Four Areas Are Extended

Four areas were credited with extensions. In Barton County Magnolia Petroleum Co. 1 Grosshardt, N½ NE NW 9-17-11w, which is still in the testing stage, was listed as an extension to the Kraft pool, and Earl Wakefield 1 Miller, E½ NW 17-16-13w, given a potential of 2,222 bbl., was an extension to the Trapp pool. The other two were in Russell County, Hayes & Anschutz 1 Ball, E½ NE NW 16-14-15w, a new Shawnee zone well that received a potential of 2,179 bbl. extending the Gorham pool, and Shell Oil Co., Inc., 1 Ruby NW NE 36-14-13w, a new 186-bbl. well from the Lansing-Kansas City lime, extending the Hall-Gurney pool. All the discoveries and extensions had previously been reported.

And, almost before the committee had completed its work, a ¾-mile extension to the Keesling pool of Rice County seemed assured at Lario Oil & Gas Co. and Derby Oil Co. 1 Dick, W½ SW NE 21-20-9w. The well topped the Lansing-Kansas City at 2,914 ft., the Arbuckle at 3,261 ft. and cored saturation from 3,263½-68½ ft. Casing was set at 3,262 ft. and standard tools were being rigged at week's end.

Penokee Discovery Is Completed

Also completed last week after 2 months of testing was R. W. Shields 1 Paxson, NE NE NE 11-8s-24w, north of the town of Penokee. The well, a pool opener for the new Penokee pool, is producing from the Lansing-Kansas City lime with a physical pumping potential of 216 bbl. a day. The well was first drilled to the Arbuckle dolomite, but was plugged back after it failed to produce, and was completed in the higher zone.

Meantime, the Sharon Drilling Co. 1 Nevins, SW SW NE 21-19-10w, in western Rice County, was listed as an opener of a new horizon in the Bowman area instead of as an extension to Silica. This well made a temporary potential of 68 bbl. a day on an initial swabbing test after acid treatment. It went into the Arbuckle dolomite at a total depth of 3,295 ft.

Continental Oil Co. 4 Powell, SW NW NW 31-18-7w, opened the Simpson zone in the Geneseo pool of Rice County with a potential of 150 bbl. a day. and was credited by the committee with being a discovery well.

AVERAGE DAILY PRODUCTION

LEADING KANSAS FIELDS

	Mar. 15	Mar. 8
Augusta	1,150	1,150
Bemis-Shutts	10,150	10,250
Bloomer	5,800	4,500
Burnett	6,150	5,950
Burrton	7,500	7,450
Chase	5,900	4,550
Elbing	1,050	1,000
El Dorado-Towanda	7,000	6,950
Geneseo	4,450	4,000
Graber	2,200	2,150
Greenwood County	8,550	8,450
Hollow-Nikkel	1,450	1,400
Keesling	450	750
Lerado	700	1,000
Lorraine	950	1,250
Oxford	700	650
Rainbow Bend	900	850
Raymond	1,300	650
Ritz-Canton	3,650	3,750
Trapp	17,650	13,700
Balance Russell County	20,500	20,300
Sedgwick County	3,250	3,150
Voshell	1,750	1,650
Silica	16,450	15,950
Wellington	1,100	1,050
Wherry	2,850	2,800
Zenith	7,100	6,850
Others	65,800	59,400
Total	206,450	191,550

KANSAS COMPLETIONS

Barton County

Kraft pool: Magnolia 1-A Grossardt, N½ NE NW 9-17-11w, pumped 90 bbl. in 6 hr., Arbuckle 3,286-93 ft.
Wildcat: Isern Brothers 1 Lillard, S½ SW SE 6-16-11w, dry, T.D. 3,278 ft., Lansing 2,968 ft., Sooy 3,255 ft., Arbuckle 3,271 ft.

Butler County

Augusta pool: Cities Service 34 Love, NE SE SW 20-28-4, pumped 16 bbl., Lansing 1,757-71 ft.
Brandt pool: Adair & Morton 15 Brandt, S½ S½ NE 15-28-7, pumped and flowed 336 bbl., Mississippi lime 2,710-38 ft.
Douglas pool: Ben Gralapp et al 1 Barns, NE SW SW 16-29-4, dry, T.D. 1,910 ft.

Cowley County

David pool: Nadel et al 1 Cash, SW SE SE 35-30-4, dry, T.D. 3,000 ft.

Ellis County

Bemis, West: Champlin 6-D Hadley, S½ NE SW 17-11-17w, 3,000 bbl., Arbuckle 3,398-3,412 ft., T.D. 3,440 ft.
Burnett pool: Dickey 3-B Carmichael, W½ NE NE 18-11-17w, 3,000 bbl., Arbuckle 3,348-58 ft.

Ellsworth County

Edwards pool: Continental 8 Rolfs, S½ S½ NE 28-17-8w, pumped 205 bbl., Arbuckle 3,214-40 ft.
Stoltenberg: Shell 1 Stevenson, SE SE SW 35-16-10w, pumped 1,931 bbl., Arbuckle 3,275-3,308 ft.
Wilkins pool: Gulf 4 Mehl, S½ NE NW 18-17-9w, pumped 994 bbl., no water, acid, Arbuckle 3,260-79 ft.
Central Petroleum 4 Francis, NW SE NW 19-17-9w, pumped 1,662 bbl., Arbuckle 4,239-46 ft.

Graham County

Wildcat: Shields 1 Paxson, NE NE 11-8-24w, pumped 216 bbl., Lansing 3,740-56 ft., T.D. 4,104 ft.

Greenwood County

Beaumont pool: Weideman 5-A Lewis, N½ SE SW 25-27-8, 1,000,000 cu. ft. gas, sand 1,118-26 ft.
Reece pool: Oko Oil 6-A Weirshing, SE NW NW 24-26-9, pumped 30 bbl., Mississippi lime 2,119-41 ft.
Severy gas field: Vandeventer 1-A Souden, NE NE 5-28-11, pumped 20 bbl., Topeka 838-39 ft.
Wildcat: C. H. Reeser 1 Knight, SE SE SW 31-27-11, location abandoned.

Marion County

Lost Springs: Ring-Mac 1 Schick, NE NE NW 33-17-4, pumped 35 bbl., Mississippi lime 2,403-35 ft., T.D. 2,482 ft.

Reno County

Wildcat: Bay 1 Woodson, W½ NE NW 28-26-9w, dry, T.D. 4,377 ft., Lansing 3,390 ft., Mississippi lime 3,914 ft., Viola 4,185 ft., Arbuckle 4,358 ft., some show oil 4,185 ft.

Rice County

Bloomer pool: Gulf 6 Ames, S½ N½ NW 6-18-10w, pumped 27 bbl. an hour, Arbuckle 3,234-41 ft.
Campbell pool: Skelly 2 Sledd, SW SW 27-19-9w, pumped 6½ bbl., Lansing 2,916 ft., T.D. 3,207 ft., old well P.B.
Geneseo pool: Continental 3 Gray, NW SE SW 19-18-7w, swabbed 256 bbl. in 4 hr., Arbuckle 3,172-92 ft.
Continental 4 Gibson, NW SE SW 24-18-8w, swabbed 207 bbl. in 3 hr., Arbuckle 3,201-14 ft.
Continental 6 Kinipel, SW NE NW 25-18-8w, swabbed 241 bbl. in 4 hr., Arbuckle 3,155-3,208 ft.

Russell County

Big Creek pool: Tom Palmer et al 1 Neidenthal, W½ SW SE 23-14-15w, swabbed 144 bbl. in 2 hr., Gorham sand 3,129-71 ft.
Fairport pool: Stanolind 5 Oswald, NE NW NW 8-12-15w, old well P.B., old T.D. 3,126 ft., P.B. Dodge 2,893 ft., pumped 67 bbl.
Hall-Gurney: Coralena 5 Phinney, S½ NW NE 30-14-13w, pumped 2,811 bbl., Lansing 2,879-2,980 ft.
Texon 2-A Hall, NW NE NE 35-14-13w, pumped 624 bbl., Lansing 2,805-80 ft.
Wildcat: Earl Wakefield 1 Holland, E½ NE SE 30-13-13w, dry, T.D. 3,373 ft., show oil 3,080 ft., Topeka 2,713 ft., Lansing 3,000 ft., Arbuckle 3,333 ft., Sooy 3,310 ft.

Stafford County

Zenith pool: Magnolia 4 Teetbar, N½ NE SE 12-24-11w, flowed 348 bbl., Viola 3,746-55 ft.

KANSAS DRILLING REPORT

Barton County

Republic 1 Radenberg ..... W½ NW SE 8-17-11w
T.D. 3,331 ft., Arbuckle 3,318 ft., swabbed 7 bbl. an hr., will acidize.
Vernon 1 Miller ..... NE SE NW 15-16-14w
Surface pipe 590 ft.
Simpson 1 Schartz ..... NW SE 1-20-12w
First report.
Lauck-Moncrief 1 Doll ..... S½ SW SE 36-18-11w
Drilling 2,700 ft.

Elk County

Aladdin 1 Westerfield ..... NE SW NW 3-32-8e
Drilling 200 ft.

Ellsworth County

Aylward 3 Ehler ..... NW NW SW 35-16-10e
Arbuckle 3,285-87 ft., rigging up standard tools.

Kearney County

Stanolind 1 Bellinger ..... SE SW 13-20-16w
Drilling 2,344 ft.

Pratt County

George E. Reeves 1 Stark .... W½ SW NW 18-26-11w
First report

Rooks County

Sharon 1 Maddy ..... SW SW 36-8-18w
Arbuckle 3,438 ft., acid, drilling 3,440 ft.
Ruso 1 Dick ..... W½ NW SW 21-10-19w
Fort Riley 2,319 ft., drilling 2,650 ft.

Stafford County

Stanolind 1 Naegel ..... E½ NE SW 3-24-15w
Drilling 3,615 ft.

Sumner County

Benedum-Trees 1 Landwehr .... S½ SE SE 17-32-1e
S.D. 4,200 ft., Arbuckle 4,127 ft., Lansing 2,960 ft., Mississippi lime 3,594 ft., no shows.

Thomas County

Alva Billings 1 Ryan ..... E½ NE SE 27-8-32w
Drilling 4,000 ft., Topeka 3,955 ft.

FOREST CITY BASIN

ST. JOSEPH, Mo., Mar. 17.—Black Gold Development Co. apparently has a producer in the Shubert region of Richardson County, Missouri, approximately a mile southwest of I. T. I. O. production. Black Gold 1 Smith in C NW NW 31-3n-16e, washed with 2 bbl. of acid, filled with fluid at the rate of 8 to 10 bbl. per hour, though 30 per cent was water. It is too early to say whether this well is a part of the I. T. I. O. pool, or what direction the structure will go. But a north offset, being drilled by Garetson &

Knisely, was believed to be running higher than 1 Smith.

In the Falls City pool Ohio Oil Co. was testing its 7 Sandrock, NW NE SW 20-1n-16e, and pumping 18 bbl. per hour, 20 per cent water. The company drilled plug at 2 Boice in SE SE 18-1n-16e, but without waiting to see results, skidded rig and started drilling the east offset—4 Bucholz in C SW NW 17-1n-16e. No. 2 Boice ran 40 ft. lower than the discovery well.

Skelly Oil Co. is drilling a deep core-hole test about a mile east of southernmost production in the Falls City pool, CNL NE 28-1n-16e. Guy Scott of Wichita and L. M. Griffith et al of Omaha are rigging up rotary tools to drill ¼ mile west of Dawson in C NW SW 15-2n-14e. Jock Garden of Hutchinson, Kans., has the contract.

In the Iowa sector of the Forest City basin Pryor & Lockhard spudded a tight hole 4 miles southeast of Bedford, Taylor County. This test, 1 Marr estate, is in C E½ NE SW 32-68n-33w.

Of interest in connection with the Missouri play is the sixty-first biennial report of the Missouri Geological Survey, just issued.

FOREST CITY BASIN DRILLING REPORT

NEBRASKA

Richardson County

Ohio 7 Sandrock .....NW NE SW 20-1n-16e
Hunton 2,232 ft., 500 gal. acid, reacidized with 500 gal., 125 bbl. in 8 hr., 20 per cent water.
Ohio 2 Boice .....SE SE 18-1n-16e
Elev. 895 ft., Hunton 2,314 ft., total depth 2,320 ft., drilled plug and waiting for test.
Ohio 4 Bucholz .....C SW NW 17-1n-16e
Drilling.
Black Gold 1 Smith .....C NW NW 31-3n-16e
Hunton 2,513 ft., total depth 2,539 ft., est. 8 to 10 bbl. an hr., 30 per cent water.
Garetson & Knisely 1 Bankers Life..SW SW 30-3n-16e
Drilling below 2,200 ft.
Guy Scott et al 1 Oswald.....C NW SW 15-2n-14e
Rigging up rotary.
J. E. Palensky 1 Kalous.....SW SW 5-2n-13e
Drilling at 1,762 ft. in Viola lime.

KANSAS

Johnson County

F. J. Kasper 1 Robinson....NE cor. SW SE 38-13s-22e
Dry at 305 ft.

MISSOURI

Platte County

Missouri Valley Gas & Oil Co. 1 Peret .....
C NW NW 12-51n-34w

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Dry at 557 ft.

IOWA

Taylor County

Pryor & Lockhart 1 Marr estate.....
C E½ NE SW 32-68n-33w
Spudded and drilling tight hole.

NEBRASKA COMPLETIONS

Pawnee County

Wildcat: Walters et al 1 Bodie....NE NE NE 12-1-9
Rig abandoned.

Dakota County

Wildcat: Peder Skriver 1 Armour....NE NE 33-28-8
Dry, T.D. 1,300 ft., Arbuckle 1,200 ft.

Texas Gulf Coast

(Continued from Page 91)

Wildcat: R. O. Lowrance 1 Juhl, dry, T.D. 6,515 ft.

Tyler County

Joe's Lake field: Republic 51 Hurd, dry, T.D. 7,757 ft.

TEXAS GULF COAST DRILLING REPORT

Brazoria County

Pure 1 Greenameyer, Manor Lake area, drilling shale 1,428 ft.
Stanolind 1 Vieman, William Parker Sur., derrick.
Strake 1 Griffith, Halls Bayou, T.D. 10,332 ft., P.B., sidetracked, drilling ahead.

Harris County

Sun 1 Foster Lumber Co., NE of Humble field, A. Turner Sur., drilling shale 7,602 ft.

Liberty County

H. E. Dishman et al 1 C. J. Robertson, Tanner's Bayou area, A. M. de la Garza Sur., drilling shale 7,085 ft.
C. G. Hooks et al 1 Lockin, Spencer Kirkham Sur., drilling shale 5,537 ft.

Matagorda County

Stanolind 1 Huebner, W of Hamman field, E. Hall Sur., drilling shale 9,865 ft.

Wharton County

F. W. Michaux et al 1 Jacob Koehl, top Discorbis 4,060 ft., Heterostegina 4,306 ft., drilling shale 5,595 ft.

Louisiana Gulf Coast

(Continued from Page 90)

J. K. Hughes 3 Pitre, 517 bbl., ¼-in. choke, perf. casing 10,094-10,126 ft., T.D. 10,193 ft.

Iberia Parish

Fausse Point field: Sun 7 Planters Lumber Co., dry, T.D. 1,818 ft.
New Iberia field: William Helis 14 Bolivar, dry, T.D. 1,143 ft.

Plaquemines Parish

Venice field: Tide Water 2 Johnson, 336 bbl., 5/32-in. choke, perf. casing 7,970-93 ft., T.D. 8,204 ft.

St. Mary Parish

Wildcat: Humble 1-C Miami Corp., dry, T.D. 11,215 ft.
West Cote Blanche field: Texas 7 State, 332 bbl., 10/64-in. choke, perf. casing 9,238-65 ft., T.D. 9,707 ft.
Horseshoe Bayou field: Texas 5 Horseshoe Bayou-State, dry, T.D. 11,335 ft.

St. Charles Parish

Lake Salvador field: Texas 5 State, 504 bbl., ⅛-in. choke, perf. casing 9,645-72 ft., T.D. 10,216 ft.
Paradis field: Texas 9 L. L. and E. Paradis, 844 bbl., ¼-in. choke, perf. casing 10,350-81 ft., T.D. 10,490 ft.

St. Tammany Parish

W. T. Burton 5 State, dry, T.D. 7,690 ft.

Terrebonne Parish

Bay St. Elaine field: Texas 20 State, 195 bbl., 6/64-in. choke, T.D. 7,968 ft.
Gibson field: Shell 5 Rosemond E. Kuntz, 192 bbl., 7/64-in. choke, sand 9,083-88 ft., 9,511-15 ft., T.D. 9,520 ft.

LOUISIANA GULF COAST DRILLING REPORT

Calcasieu Parish

Gulf 1 Calcasieu National Bank, Hayes prospect, 18-11s-5w, T.D. 9,084 ft., drill stem stuck.

Cameron Parish

Superior 1 Miami Corp., south of Grand Lake field. 29-14s-4w, drilling shale 7,544 ft.

Evangeline Parish

C. & I. Production Co. 1 Evangeline Land & Mineral Co., Pine Prairie prospect, drilling 1,035 ft.

Plaquemines Parish

Phillips 1 State-Bastian Bay prospect, 48-20s-29e, drilling shale 11,480 ft.

St. Bernard Parish

California Co. et al 1 Biloxi Marsh Lands Co., 25-12s-16e, S.D. 11,003 ft.

St. Martin Parish

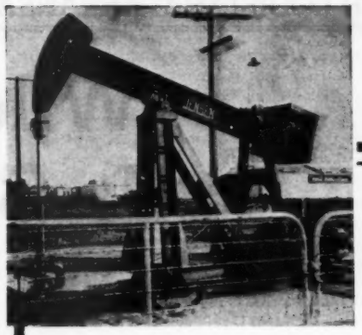
Shell 1 State, Duck Bay prospect, 1-15s-11e, drilling shale 11,205 ft.

Terrebonne Parish

Barnsdall 1 State, Point Au Fer prospect, building derrick.
Sinclair Prairie 1 Aragon Plantation, Bourg prospect, derrick.

Vermilion Parish

Phillips 1 Dugas, Erath field, drilling shale 6,733 ft.
Texas 1 Broussard, Erath field, drilling shale 10,974 ft.



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HOUSTON

Wilcox Oil Production Shown In Summerville Deep Pay

By
GEORGE WEBER

SHREVEPORT, La., Mar. 17.—The first commercial oil production in the Summerville area, La Salle Parish, resulted in a 1½-mile northwest extension of the field. Prospects for new Wilcox production are seen in other tests. South of Georgetown, Lion Oil Refining Co. opened a new pool in the top of the Wilcox with a small pumping well.

The North Lisbon outpost, Union Producing Co. 1-A Meadows was completed last week, flowing 303 bbl. of 55.6-gravity condensate in the first 15 hours through a ¼-in. choke. The gas production was 4,150,000 cu. ft., giving a gas liquid ratio of 8,646 cu. ft. per barrel of condensate. This deepest producer in North Louisiana was perforated at 10,148 to 10,398 ft. The further development of the Smackover lime production on the Lisbon structure can not be determined at this time. The depth makes such development costly even on a wide-spacing program. The high yield of condensate, however, may bring further drilling not otherwise justified, and interesting operations relating to cycling or repressuring at Lisbon may follow.

The Union well is the first to produce from the Smackover in Louisiana, although deep wildcats penetrated that formation on the Pine Island and Haynesville structures. The lime is responsible for most of South Arkansas' current flush production, and is encountered there at depths ranging from 4,900 ft. at Snow Hill, to 9,150 ft. at McKamie.

SUMMARY OF COMPLETIONS

North Louisiana

	No.	Bbl.	Footage
Oil wells: Caddo	2	40	3,096
Lisbon	1	*331	11,834
Sugar Creek	1	174	5,903
Nebo	1	375	3,910
Olla	2	330	4,631
Summerville	1	72	2,779
Carterville	1	25	2,704
Wildcats	2	36	5,101
Gas wells: Monroe	1	†5,000	2,225
Dry holes: Sibley	1	.....	5,818
Total	13	.....	48,001

Arkansas

Gas-condensate wells: McKamie	1	*528	9,362

*Gas condensate. †Million cu. ft.

Wilcox Discoveries

The most important development in the Wilcox trend of La Salle and surrounding parishes last week was completion of Placid Oil Co. 1 Tremont, 1½ miles northwest of the Summerville gas field. The new discovery has 7-in. casing set at 2,662 ft., nearly 900 ft. below the top of the Wilcox. Perforations were first shot at 2,522-32 ft. and the well gages 60 bbl. of fluid, 20 per cent salt water, together with 300,000 cu. ft. of gas. The perforations were squeezed and the section reperforated at 2,528-34 ft. Water shutoff was successful, the well gaging 72 bbl. of 28.1-gravity oil and 600,000 cu. ft. of gas. Tubing pressure was 810 lb. and casing pressure 910 lb.

The field has indicated oil production previously in the two tests drilled by Peterson Petroleum Co. Both Peterson tests showed oil, but the first was completed as a gasser, and the second was abandoned after several attempts to complete. Hunt has taken over the Peterson acreage.

Lion Oil Refining Co. 1 Goodpine was completed for a small pumper last week, making 32 bbl. daily, 5 per cent salt water. The pool discovery is producing from the top of the Wilcox, corresponding to that from the nearby Tullos-Urania and Georgetown fields.

In addition to the Wilcox play, the Sparta formation is gaining interest in the La Salle Parish area. Big West Drilling Co. 1 Whatley, about 4 miles northwest of the Nebo field, has shows of oil in a Sparta sand at 1,630-42 ft., and a Wilcox sand at 3,148-68 ft. A string of 5½-in. casing has been set at 3,566 ft., total depth, and testing of the horizons will command considerable interest.

The J. D. Critchett et al 1 Jones, 3 miles southeast of the Nebo field, La Salle Parish, is also a focal point of interest. Sand at 3,576-84 ft. has showed oil. Seven-inch casing is stuck at 2,900 ft. Operators plan to set a short string at 3,963 ft., total depth, for a test.

In the vicinity of Little Creek, 3 miles west of gas production in Summerville, Placid Oil Co. 1-B Goodpine last week swabbed an estimated 20 bbl. of fluid, half salt water and half oil. After standing over night, the test filled with 1,500 ft. of fluid, of about equal proportions of oil and water, and operators are awaiting a pumping unit. This horizon, perforated at 3,576-81 ft., is deeper than now producing in the north Summerville outpost and other Wilcox pools of the parish.

Small Natchitoches Oiler

J. E. Watts has brought in 1 Tanner, 18-10-10, for a small pumper making 5 bbl. of oil and 25 bbl. of salt water daily. The wildcat is near the Sabine and Red River parish border.

Greenwood Active

A second test has been staked for the Greenwood gas field of western Caddo Parish. Delta Drilling Co. will test Travis Peak or the Hosston formation, according to reports, to investigate deeper possibilities in the shallow gas field.

Arkansas Developments

Doubt is now expressed as to whether the Barnsdall Oil Co. 1 Cornelius at McKamie is really an oil well. The test was brought in last week flowing 22 bbl. hourly of 55.3-gravity liquid, at a gas-liquid ratio of about 8,000 cu. ft. per barrel. This ratio is the same as for other wells in the field, shown by experimental research to be gas-condensate wells. The gravity of the liquid when first produced early in March was 47°.

The company will allow the Arkansas Oil and Gas Commission to produce the well over the next few weeks to make production tests and study the well's gas-liquid characteristics. A regular field unit widely used in testing gas-condensate wells will be employed on the test. By latest reports the gravity of the produced liquid was 58°, which corresponds closely to that produced in the three other wells in the field. The reason for so much interest on whether or not the Barnsdall well is a gas-condensate or oil well is that recently McKamie was classified as a gas field, and as such, was given 160-acre spacing. The proof of oil production will require modification of the recent ruling, since Arkansas law forbids spacing units exceeding 40 acres, with a 10-acre special concession for oil-field development.

NORTH LOUISIANA COMPLETIONS

Caddo—Caddo Parish

J. E. Kemp 1 Hobbs .....NW SE NW 28-21-15
Pumped 5 bbl., 7-in. casing 1,370 ft., T.D. 1,528 ft.
Weaver Perry Oil Co. 3 Pardue ..NE NE NW 33-21-15
Pumped 35 bbl., T.D. 1,568 ft., 7-in. casing 1,400 ft., 4,000 gal. acid.

Wildcat—Claiborne Parish

Union Producing Co. 1-A Meadows et al ....NE 18-21-4
331 bbl., 55.6-gravity condensate, 12/64-in. choke, T.P. 4,100 lb., C.P. 4,500 lb., 2,600,000 cu. ft. gas through perf. 10,148-10,398 ft., T.D. 11,834 ft., new Smackover horizon, Lisbon structure.

Sugar Creek—Claiborne Parish

Union Producing Co. 1 White unit.....E½ 36-20-6w
174 bbl., 12/64-in. choke, T.P. 750 lb., C.P. 1,100 lb., T.D. 5,903 ft., perf. 5,774-90 ft.

Olla—La Salle Parish

Ark. Fuel Oil Co. 2 Mathews.....NE SE 26-10-2e
180 bbl., 14/64-in. choke, 5 per cent salt water, T.P. 630 lb., C.P. 350 lb., perf. 2,207-13 ft., Mathews sand, T.D. 2,275 ft., 7-in. casing 2,275 ft.
Placid Oil Co. 2 Sills .....NW SW 25-10-2
150 bbl., 7 per cent salt water, 30/64-in. choke, T.P. 70 lb., C.P. 360 lb., T.D. 2,356 ft., perf. 2,210-24 ft., Wilcox, 7-in. casing 2,354 ft.

Nebo—La Salle Parish

H. L. Hunt 14-A Goodpine .....NW SW 10-7-3
375 bbl., 14/64-in. choke, T.P. 875 lb., C.P. 1,425 lb., T.D. 3,910 ft., perf. 3,850-56 ft., Wilcox sand.

Wildcat—La Salle Parish

Lion Oil Ref. Co. 1 Goodpine.....SW SW 25-9-1e
Pumped 16 bbl. in 12 hr., 5 per cent salt water, T.D. 1,671 ft., 7-in. casing set 1,671 ft., perf. 1,642-48 ft., top Wilcox formation.

Little Creek—La Salle Parish

Placid Oil Co. 1 Tremont.....23-9n-2e
Flowing 70 bbl. 28-gravity oil, perf. 2,528-34 ft., T.D. 2,779 ft., shut in.

Summerville—La Salle Parish

Placid Oil Co. 1 Tremont Lumber Co...NW SE 23-9-2e
72 bbl., ¼-in. choke, 600,000 cu. ft. gas, T.P. 810 lb., C.P. 910 lb., T.D. 2,779 ft., 7-in. casing 2,662 ft., perf. 2,528-34 ft.

Wildcat—Natchitoches Parish

J. E. Watts 1 Tanner.....SW SW NW 18-10-10
Pumped 5 bbl. oil, 25 bbl. salt water, T.D. 3,213 ft., plugged back from 3,430 ft., 5½-in. casinng 3,220 ft.

Monroe—Ouachita Parish

Southern Carbon Co. 8 Richland E½ W½ SW 23-19-4e
5,000,000 cu. ft. gas, R.P. 300 lb., 1,000 gal. acid, 6⅝-in. casing 2,152 ft., T.D. 2,225 ft.

Carterville—Webster Parish

Juan et al 1 Cook, 1,681 ft. S north line, 250 ft. at right angles to W line of fractional 2-22-11, pumped 25 bbl. oil, 35 bbl. salt water, T.D. 2,704 ft., 7-in. casing 2,690 ft., T.D. 2,695 ft.

Sibley—Webster Parish

W. G. Ray 1 Burson unit.....SE NW NW 35-18-9
T.D. 5,818 ft., dry.

NORTH LOUISIANA DRILLING REPORT

Greenwood—Caddo Parish

Delta Drlg. Co. 1 Thigpen-Herald.....S½ 13-17-16
First report.

Caddo—Caddo Parish

A. H. Foshee 1 Bunker & Tompkins .....
SW SE NW 18-21-15
First report.

Sugar Creek—Claiborne Parish

Haynes B. Ownby 1 Taylor.....SE SW NE 5-19-5w
First report.
Union Producing Co. 2 Warren Brown.....
NW NE SE 36-20-6w
First report.

Olla—La Salle Parish

Ark. Fuel Oil 1-E KeKes .....NE SE 7-10-3e
First report.

Monroe—Union Parish

T. I. P. Co. 1 Jordan.....N½ SE SW 11-21-3e
First report.

Cotton Valley—Webster Parish

Hunt Oil Co. 1 Grigsby.....N½ SW 17-21-9
First report.

Wildcat—Winn Parish

Sells Pet. Co. 1 Feazel et al.....NE NW 26-13-3w
First report.

Wildcat—Bossier Parish

R. L. Reese 1-A Bellevue Land Co.....
SW NE SW 27-20-11
T.D. 3,007 ft., tested salt water 2,847-57 ft., will deepen.

Catahoula Parish

H. L. Hunt 1 Southern Kraft.....SE SE 19-10-6e
10¾-in. casing 326 ft., waiting on cement 400 ft.

Concordia Parish

K. Hughes 1 Nelson .....SE NW SE 34-9-10
Rigging up.

La Salle Parish

Big West Drlg. Co. 1 Whatley..... NE NE 25-8-2e
5½-in. casing 3,566 ft. to test shows oil in Sparta, Wilcox.
J. D. Critchett et al 1 Jones..... NW NW 41-7-3e
T.D. 3,963 ft., 7-in. casing stuck 2,900 ft., will set short string to test oil showing 3,576-84 ft.
Placid Oil Co. 1-B Goodpine .....NE NW 33-9-2e
Swabbed fluid 50 per cent oil, waiting on cable tools, 1,500 ft. fluid in hole.
Placid Oil Co. 1 Doughty.....NE SW 32-9-2e
First report.

Lincoln Parish

Big West Drlg. Co. 1 Patton est...E½ W½ SE 7-20-4w
16-in. casing 121 ft., waiting on cement 130 ft.
Herman Brown 1 Ark. La. Gas Co...SW NE 11-17-4
Drilling sand 8,440 ft.

Red River Parish

Thornton & La Croix 1 Prudential SW SW NW 31-11-9
S.D. 1,317 ft.

Sabine Parish

Plummer & McDaniel 1 Phares..NW NW SW 4-5-12
Set 16-in. casing 70 ft., S.D. 98 ft.
Roy Raines 1 Carter.....SW NW NW 27-0-11
S.D. 2,403 ft.

(Continued on Page 98)

Gas Found Above Regular Steveville Pay

By VICTOR LAURISTON

CHATHAM, Ont., Mar. 15.—In the Steveville field, eastern Alberta, Standard of British Columbia 3 Princess, LSD 5, 13-20-12w4, coring above the lime, encountered a gas flow, estimated more than 1,000,000 cu. ft. a day, between 3,151 and 3,166 ft., and is coring close to the Madison below 3,192 ft. Crude production is expected in the upper Madison around 3,250 ft. Standard No. 2, discovery well, LSD 3, 15-20-12w4, is shut in, with railroad spur laid and tankage set up to handle production. It flowed at the rate of 521 bbl. a day on 8-hour test. Standard 4 Princess, LSD 13, 12-20-12w4, is rigging diesel rotary and will spud within a few days. Location is 1,920 ft. southwest of No. 2 producer. Anaconda-Patricia 1, LSD 9, 31-20-12w4, has derrick up and is moving in light rotary equipment. Steveville Oils 1, LSD 5, 18-20-11w5, has derrick up and is waiting for rotary.

Standard plans survey.—In addition to systematic development of its Steveville acreage, Standard Oil Co. of British Columbia will start geophysical surveys about May 15 on a number of other potential oil structures in Alberta. Two parties comprising from 30 to 35 men, chiefly from the Mid-Continent field, will be engaged in the work.

Turner Valley Quotas

The March schedule of allowables, providing a daily average of 26,000 bbl. from 137 Turner Valley crude producers, includes 38 wells of Royalite Oil Co. and associate interests with 8,488 bbl. a day. Anglo-Canadian Oil Co. and associate interests, with 22 wells, account for 2,861 bbl. daily; Home Oil, with 5 wells, 3,320 bbl.; and the Brown-Moyer-Brown group, with 13 wells, have 1,386 bbl. The remaining production is allocated to various small independent groups and individual wells. Imperial Oil takes crude from 84 wells with a daily aggregate of 18,199 bbl., British-American Oil Co. from 40 wells with 5,309 bbl., and the Mayland Gas & Oil Products interests from 15 wells with 2,492 bbl. daily.

New completions given their first definite allowables include Home Oil 1, LSD 8, 33-20-3w5, with 745 bbl., and Royalite Oil 53, LSD 4, 19-19-2w5, with 250 bbl.

Turner Valley lime tests.—North Turner Valley: Home Oil 6, LSD 8, 28-20-3w5, finished at 8,446 ft. is still testing for allowable.

West Central field: Royalite Oil 54, LSD 1, 7-19-2w5, finished at 7,367 ft., is completing tests for allowable.

Okalta Oil 10, LSD 12, 18-19-2w5, is below 7,580 ft. after getting the lime at 7,500 ft.

Independent Royalties 1, LSD 7, 24-19-3w5, got the Madison at 7,755 ft. and is deepening after cementing casing at 7,773 ft.

Anglo-Phillips 2, LSD 9, 35-19-3w5, is below 7,532 ft. after getting the Madison at 7,270 ft.

New tests starting.—North Turner Valley: Atlas-British Dominion 2, LSD 4, 17-21-3w5, spudded below 50 ft.

West Central field: Renown Royalties 1, LSD 8, 24-19-3w5, spudded and below 70 ft.

Tests in the Foothills.—Clearwater structure: Ram River Oils 2, 1-37-11w5, in the Devonian limestone below 2,591 ft. Clear Oils 1, LSD 8, 2-35-10w5, in the Devonian below 1,125 ft.

Moose dome: McColl-Frontenac Oil 1, LSD 9, 6-23-6w5, in the lime below 4,753 ft. with light shows of oil and gas.

Border fields.—Blood Indian Reserve: Northwest-West Petroleum 1, LSD 3, 20-5-23w4, deepening below 6,815 ft., 695 ft. in the Madison limestone.

Lethbridge structure: Arrangements have been made to finance completion of Lethbridge Petroleums 1, LSD 12, 11-8-22w4, and casing will be run to 3,325 ft. before deepening.

New regulations, designed to encourage the systematic exploration of potential oil and gas structures in Alberta will be announced shortly by the provincial government. While details have not been announced, it is understood the government will assist in systematized wildcatting in every way possible outside of actual financial contributions. A purpose of the government is to insure the concentration of early development work on the likeliest potential areas, and to eliminate wasteful duplication of effort. The government, on the basis of recent surveys, has determined that at least 30 areas in the province are potentially oil bearing. Of these areas, 15, in the more remote districts, have been withdrawn from leasing and set up as oil reserves; and the remaining 15 areas will be open for filing under the revised regulations.

The areas withdrawn and set aside as oil reserves are: Clear Hills, from the Peace River north to the fifty-seventh parallel, and from the British Columbia to the Saskatchewan boundary; Marten Hills, Townships 73 to 76, between 113th and 115th meridians; Big Bend, Townships 65 to 68, Ranges 24w4 to 26w4; Sand River, Townships 67 to 72, Ranges 3w4 to 8w4; Smoky River, Townships 56 to 61, Ranges 1w5 to 9w5; Kaybob, Townships 61 to 64, Ranges 18w5 to 20w5; Cynthia, Townships 49 to 52, Ranges 10w5 to 14w5; Virginia Hills, base line 16 to 18, meridians 115 and 116; Dorothy, Townships 27 to 30, Ranges 14w4 to 16w4; Acadia, Townships 23 and 27, north of Red Deer River, Ranges 1w4 to 3w4; Antelope Plains, Townships 15 and 20, Ranges 2w4 to 9w4; Grand Forks, Townships 12

(Continued on Page 99)

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Hawkins Development Gathers Speed in Townsite Area

By R. MARNE SANFORD

DALLAS, Tex., Mar. 17.—Four tests in the Hawkins field of Wood County were nearing the completion stages at the close of the week, while several new locations were scheduled to start drilling this week.

The three Hawkins field tests being most closely watched are General American Oil 1-A Kay, Reese addition, which is drilling ahead below 4,625 ft. and nearing the pay. The same firm's 1 Giles, same addition, is drilling below 4,300 ft., while the Tex-Jersey Oil 1 McClenny is drilling below 4,650 ft. All of these tests will set casing for completion attempts some time this week.

For new starts in the Hawkins field, Roger Lacy 1 J. B. Smith, just north of the Hawkins school, is rigging up. Another is the Bracken Oil 1 McClenny, a townsite-lot test. Several indicated new locations were seen for the field when Bobby Manziel, discoverer of the field, received permits to drill 1-A and 2 Bell, both on a 31.7-acre tract in the Wideman Survey, where 1 Bell blew out as a wild gas well early in the field developmental stages. No. 1-A was drilled some time ago to 2,400 ft. as a relief well to the plugged gasser. It is expected that only 2 Bell on the tract will go to the Woodbine sand.

SUMMARY OF COMPLETIONS

East Central Texas

	No.	Bbl.	Footage
Oil wells: Talco	1	46	4,302
Hawkins	1	334	4,777
Other fields	2	142	8,354
Gas wells: Hawkins	1	*3.2	4,515
Total	5	.....	21,948

*Million cu. ft.

Crow Wildcat

A wildcat test near the town of Crow in Wood County is being closely watched as it cores ahead below 5,400 ft. It is Ryan Consolidated Oil and W. C. McGlothlin 1 Gout, William Clark Survey, 2 miles northeast of the townsite of Crow. With an elevation of 457 ft., the Austin chalk was topped at 4,823 ft., the Eagleford shale at 5,009 ft. and the Woodbine section at 5,279 ft. Saturated Woodbine sand is hoped for within the next 150 ft. The Crow structure and large block came into prominence shortly after the discovery of the Hawkins field, there having been a supposed geological high northeast of the townsite of Crow for several years.

Willow Springs

With both Rogers Lacy (Southern Gas Co.) and Humble Oil & Refining Co. having staked new deep tests for the Willow Springs field of Gregg County last week, the area took on new importance as two new outlets were planned for the field. The Southern Gas Co. is supplying the city of Longview with natural gas and will construct a 4-in. welded line from the field to that city. The other line will be a 4-in. welded line from the field to the Lacy refinery at Longview and will transport distillate produced in the field. Each line will run about 8 miles in length from the field to the city of Longview.

Lacy's new location in the field is preparing to start this week, bad roads and weather being given as the cause of delay the past week. It is 1 Horton & Dickinson, Meredith Survey, ¾ mile northwest of production. The Humble location is 1 W. A. Fisher, about a mile-west outpost to the field and only 2 miles east of the East Texas field.

An increased drilling program would be started in the field by Lacy should plans materialize to construct a pipe line to the city of Dallas. The Southern Gas Co. was contemplating such a move about 2 weeks ago. Lone Star Gas Co. and its subsidiaries are headquartered in Dallas and supply the city with its natural gas.

Chapel Hill Extension Seen

Seeking the first Pettit lime oil producer on the west flank of the Chapel Hill structure in Smith County, Sun Oil 1 Dickerson, Holden Survey, was testing at a total depth of 8,285 ft. at the close of the week. The well drilled shows of oil in the Pettit lime and perforated casing with 439 shots from 8,206-85 ft. The section was treated with 1,500 gal. of acid after preliminary treatment with 500 gal. Most of the oil production from the deep level in the field has been limited heretofore to the northern and northeastern flanks of the structure.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

Long Lake field: Magnolia 1 Focke, 60 bbl. daily, 6/64-in. choke 4,322-26 ft., T.D. 5,345 ft.

Franklin County

Talco field: Magnolia 2 Easterling, 46 bbl., pumping, daily, 4,278-84 ft., T.D. 4,302 ft.

Freestone County

Wortham field: B. Carter 1 Ella Dod, 82 bbl. oil, pumping, daily, plus 95 per cent salt water, 2,985-3,999 ft.

Wood County

Hawkins field: Humble 1 Dagnell, top Woodbine 4,263 ft., perf. casing 4,398-4,416 ft., 3,280,000 cu. ft. gas daily, 4-in. choke, T.D. 4,515 ft.
Humble 1 Williams, top Woodbine 4,225 ft., perf. casing 4,682-94 ft., 334 bbl. in 18 hr., ¾-in. choke, 26-gravity oil, T.D. 4,777 ft.

EASTERN TEXAS WILDCAT REPORT

Anderson County

Griffith Bros. 1 Clayton, William Frost Sur., Elkhart area, preparing to spud.
R. H. & W. Oil 1 Saunders, 17-acre tract in Joseph Ferguson Sur., in Frankston townsite, top sub-Clarksville 4,874-4,910 ft., fishing 5,225 ft.
Texas 1 Greenwood, M. Salisar Sur., 4 mi. NW Palestine, drilling 2,050 ft.

Camp County

Lucey 1 McKenzie, L. William Sur., ¾ mi. W of Pittsburg field, moving in rotary.

Lamar County

Whitehead & Dahl Bros. 1 J. M. Barr, P. Compton Sur., 9 mi. S Paris, location.

Leon County

H. A. Lindsay 1 J. L. White, McKinney & Williams Sur., 1 mi. SE of Buffalo, 10¾-in. at 1,021 ft., T.D. 2,025 ft.

Rusk County

Delta Drilling Co. 1 Kangera, 113-acre tract in R. Lane Sur., 3 mi. N of Henderson, 8,200-ft. test, drilling 5,680 ft.
Skelly Oil 1 Markey, Nolan Sur., 4 mi. SW of Mount Enterprise, 8,000-ft. test, top Austin 3,352 ft., drilling 7,300 ft.
Beddinghouse 1 J. A. McCreary, H. Huejas Sur., 6 mi. SW of Enterprise, spudding.

Upshur County

Sun Oil 1 W. C. Henderson, NW cor. of 27-acre tract in 100-acre tract in Robinson Asher Sur., just outside town of Ore City, 7,000-ft. test, drilling 6,000 ft.

Wood County

Humble 1 Bryant, 467 ft. from N and W lines of W. Parker Sur., in Hawkins area, top Woodbine 4,215 ft., T.D. 4,495 ft., preparing to complete as gas well, making 1,240,000 cu. ft.
Humble 1 Williams, 1,400 ft. from S and 467 ft. from W lines B. H. Hamilton Sur., in Hawkins area, top Woodbine 4,223 ft., saturation 4,480-4,580 ft., T.D. 4,773 ft., preparing perf. casing in Woodbine to test.
Humble 1 Clift, 106-acre tract in James Pollack Sur., in Hawkins area, coring 4,585 ft.
Jackson & McGlothlin 1 Moore, 10-acre tract in Joseph Knight Sur., in Crow townsite, Woodbine sand test, preparing to spud.
Ryan Consolidated Oil and W. C. McGlothlin 1 Gout, William Clark Sur., near Crow, top Woodbine section 5,379 ft., coring below 5,400 ft.

North Louisiana, Arkansas

(Continued from Page 96)

ARKANSAS COMPLETIONS

McKamie—Lafayette County

Barnsdall Oil Co. 1 R. R. Cornelius..SW NW 28-17-23 528 bbl., ¼-in. choke, 55.3 gravity, T.P. 2,950 lb., C.P. 3,025 lb., T.D. 9,362 ft., 5½-in. casing 9,362 ft., perf. 9,295-9,328 ft.

ARKANSAS DRILLING REPORT

Troy—Nevada County

Berry Asphalt Co. 7 C. C. Fincher....NE SE 10-14-20
First report.

Nick Springs—Union County

Lion Oil Ref. Co. 1 E. G. Dunbar..NE NW SW 31-17-14
First report.

Wildcat—Clark County

Coker, Christmas & Grieves 1 Williams.....
NE NE NE 7-11-20
Moving in rig.

Faulkner County

Cato Oil Co. 1 R. R. Harrell.....SE SW 35-4n-12w
Drilling shale 3,477 ft.

Lonoke County

J. F. Russell 1 J. T. Gunter.....SE SE 17-5n-10w
S.D. 2,808 ft.

Miller County

Louark Prod. Co. 1 E. J. Hendrick et al .....
SE NE 27-19s-27w
Drilling shale and lime 5,575 ft.

Ouachita County

Frank J. Hughes 1 Rath & Cartier, Inc. .....
NE SW NE 35-13-18
S.D. 2,506 ft.

Prairie County

Alvin E. Stark (former Hazen Oil Co.) 1 Fidelity .....
NE SW 16-2n-6w
S.D. 770 ft., repairing rig.

Sevier County

Gramp Oil Co. 2 F. Phillips....SW SW SW 26-9-30
S.D. 1,030 ft.

St. Francis County

U. S. Oil Corp. 1 Wilford.....NE SE NE 29-4n-1w
S.D. 2,265 ft.

Union County

C. H. Murphy 1-C Cates.....NW SW 33-18-15
Perf. four horizons between 6,023 ft. and 6,961 ft., tested salt water, some oil, prepare retest 6,023-25 ft., oil and salt water, T.D. 7,820 ft.

EAST TEXAS BORDER DRILLING REPORT

Marion County

D. L. Butler et al 1 W. G. Bailey, Robert Maxwell Sur., drilling 2,936 ft.
A. J. Vestal et al 1 C. Moseley, David Lane Sur., Rigged up and S.D.
P. L. Withers et al 1 T. G. Allen, Robert Potter Sur., S.D. 2,366 ft.

Sabine County

Sturm & Womack 1-A Keith, L. Grace Sur., drilling sidetracked hole 3,867 ft.

San Augustine County

B. F. Findley et al 1 G. W. Allen, A. N. Davis Sur., S.D. 450 ft.
Roper & Todd 1 Long Bell, N. Hyden Sur., S.D. 793 ft., moving in rig.

Shelby County

Cougar Oil Co. 1 Jones, John Latham Sur., S.D. 2,509 ft.
Paul Pewitt 1 J. E. Hughes, William Snider Sur., first report.

AVERAGE DAILY PRODUCTION

NORTH LOUISIANA

	Barrels
Bellevue	605
Caddo light	6,220
Caddo heavy	2,050
Converse	540
Cotton Valley	*13,600
Cross Lake	3,010
De Soto and Red River	1,000
Elm Grove	300
Haynesville	2,575
Holly	100
Homer	2,805
Lisbon	2,845
Little Creek	45
Nebo	1,235
Olla	10,160
Pleasant Hill	90
Rodessa	15,245
Sarepta-Carterville	†255
Sligo	2,465
Sugar Creek	1,275
Urania	2,270
Zwolle	1,230
Total North Louisiana	69,020

SOUTH ARKANSAS

Atlanta	2,525
Big Creek	80
Buckner	2,275
Champagnolle	1,130
Dorcheat	1,700
El Dorado	1,560
Fouke	260
Lewisville	380
Lisbon	200
Magnolia	19,550
McKamie	1,500
Miller County	250
Nevada	570
Nick Springs	12,00
Rodessa	1,635
Schuler	16,500
Smackover light	1,730
Smackover heavy	13,445
Stephens	515
Troy	1,085
Urbana	1,650
Village	1,065
Total South Arkansas	70,805

*3,915 bbl. is distillate.
†42 bbl. is distillate.

REVISED CALIFORNIA HEAVY-CRUDE PRICES

Crude-oil prices at the well, unless otherwise specified, effective March 12, 1941
(All gravities above those quoted take highest price offered in that field)

Gravity	Newhall, Kern River, Kern Front, McKittrick, Round Mountain	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Elwood Terrace
14-14.9	$0.65	...	...	...	$0.65	$0.65	$0.65	...	...	...
15-15.9	.65	...	...	...	.65	.65	.65	...	...	...
16-16.9	.65	...	...	...	.65	.65	.65	...	...	...
17-17.9	.65	...	...	...	.65	.65	.65	...	...	...
18-18.9	.65	...	...	...	.65	.65	.65	...	...	...
19-19.9	.65	...	...	$0.65	.65	.67	.65	$0.65	...	...
20-20.9	...	...	...	.65	.69	.70	.65	.65	...	...
21-21.9	...	...	...	.65	.74	.74	.67	.65	...	...
22-22.9	...	...	...	.68	.79	.78	.70	.65	...	...
23-23.9	...	...	...	.71	.84	.82	.74	.68	...	...
24-24.9	...	...	...	.75	.89	.86	.78	.71	...	...
25-25.9	...	...	...	.79	.94	.90	.82	.75	...	...
26-26.9	...	...	...	.83	.99	.95	.85	...	...	...
27-27.9	...	$0.83	$0.92	.87	1.04	.99	.89	...	...	...
28-28.9	...	.86	.95	.91	1.09	1.03	.92	...	...	...
29-29.9	...	.89	.97	.95	1.14	1.07	.94	...	...	...
30-30.9	...	.92	.99	.99	1.19	1.11	.97	...	...	...
31-31.9	...	.95	1.02	1.02	...	...	.99	...	...	f.o.b. ship
32-32.9	...	.98	1.04	1.06	...	...	1.02	...	...	
33-33.9	...	1.01	1.07	...	...	...	1.04	...	$1.04	$1.13
34-34.9	...	1.04	1.09	...	...	...	1.07	...	1.08	1.16
35-35.9	...	1.07	1.12	...	...	...	...	...	1.12	1.19
36-36.9	...	1.10	1.14	...	...	...	...	...	1.15	...
37-37.9	...	1.13	1.16	...	...	...	...	...	1.19	...
38-38.9	...	1.16	1.19	...	...	...	...	...	...	...
39-39.9	...	1.19	...	...	...	...	...	...	...	...

CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

Complete crude-price schedules are now being published in the first issue of each month. The last complete schedule was published in the March 6 issue. All changes in crude-oil-price schedules will be published completely in the first issues following the announcement of the changes. Following are representative crude-price schedules in barrels (42 gal.):

East Texas	$1.10
Conroe	1.27
Tepetate, Louisiana	1.03
Smackover, Arkansas, heavy	.73
Illinois basin	1.15
Pecos County, Texas	.78
Lance Creek, Wyoming	.77
Bradford, Pennsylvania	2.15

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill, California*	Oklahoma, Kansas	Gulf Coast, Texas
14-14.9	$0.65	....	....
15-15.9	.65	....	....
16-16.9	.65	....	....
17-17.9	.65	....	....
18-18.9	.65	....	....
19-19.9	.69	....	$0.86
20-20.9	.73	$0.70	.88
21-21.9	.78	.72	.90
22-22.9	.82	.74	.92
23-23.9	.86	.76	.94
24-24.9	.90	.78	.96
25-25.9	.95	.80	.98
26-26.9	.99	.82	1.00
27-27.9	1.03	.84	1.02
28-28.9	1.07	.86	1.04
29-29.9	1.10	.88	1.06
30-30.9	1.14	.90	1.08
31-31.9	....	.92	1.10
32-32.9	....	.94	1.12
33-33.9	....	.96	1.14
34-34.9	....	.98	1.16
35-35.9	....	1.00	1.18
36-36.9	....	1.02	1.20
37-37.9	....	1.04	1.22
38-38.9	....	1.06	1.24
39-39.9	....	1.08	1.26
40-40.9	....	1.10	1.28

*Effective February 1, 1940.

Canadian Fields

(Continued from Page 97)

and 13, Ranges 11w4 and 12w4; Crow Indian Lake, Townships 5 and 6, Ranges 13w4 and 14w4; Lucky Strike, Townships 3 and 4, Ranges 11w4 and 12w4; Alhambra, Townships 37 to 42, Ranges 5w5 to 7w5.

Areas to be thrown open for filing, and which will be announced later, are selected as those most convenient to transportation and market facilities.

Max W. Ball, president of Abasand Oils, Ltd., which is operating a 350-bbl. separation and refining plant for treating the bituminous sands of the Athabaska area, has announced that plans are under consideration for extending operations with a view to larger crude recovery. The project includes the establishment of a separation plant north of McMurray with a recovery capacity of 10,000 bbl. a day, the crude to be transported by pipe line to waterways and thence by rail to Edmonton, where it will be refined. The entire cost of the project, including the Edmonton refinery, is approximately $8,000,000.

New Tests in Ontario

Chatham Township: Union Gas 32, Lot 19, Concession 9, drilling.

Camden Gore: Union Gas 104 Dawn, Lot 10, Concession 10, drilling.

Rocky Mountain Runs

Production estimates for week ended March 15:

	Bbl.
MONTANA	
Kevin-Sunburst	4,610
Border	40
Cat Creek	470
Cut Bank	12,200
Pondera	890
Total Montana	18,210
WYOMING	
Salt Creek	13,830
Big Muddy	1,180
Badger Basin	180
Black Mountain	100
Byron	4,020
Cody Dome	50
Cole Creek	710
Dallas Derby	170
Dutton Creek	50
East Mahoney-Ferris	200
Elk Basin	740
Frannie	3,110
Garland	2,040
Grass Creek	1,870
Hidden Dome	80
Hudson	230
Iron Creek	10
LaBarge	2,000
Lance Creek	26,040
Lost Soldier	5,410
Mahoney	200
Maverick Springs	710
Medicine Bow	710
Mule Creek	190
Oregon Basin	6,400
Osage	600
Poison Spider	290
Quealy Dome	440
Rock River	2,510
Teapot	10
Warm Springs	70
Wertz	6,410
Total Wyoming	80,560
COLORADO	
Iles Dome	1,520
Florence	80
Fort Collins and Wellington	340
Wilson Creek	870
Moffatt	250
Greasewood	20
Rangely	70
Tow Creek	120
Price	260
Total Colorado	3,530
NEW MEXICO	
Arrowhead	3,670
Caprock	40
Cooper	2,990
Corbin	60
Eaves	720
West Eunice	390
Eunice	17,960
Halfway	270
Hardy	2,810
Hobbs	9,660
Jal	380
Langlie	4,270
Lynch	410
Lynn	960
Mattix	4,740
Monument	18,480
North Lynch	20
Penrose	4,590
Rhoades	300
Skaggs	70
Skelly	1,840
South Eunice	2,570
South Lovington	1,330
Vacuum	12,600
Artesia-Maljamar	18,860
Aztec-Bloomfield	10
Getty	100
Hogback	200
Rattlesnake	320
Table Mesa	100
Total New Mexico	110,720
Total Rocky Mountain region	213,020

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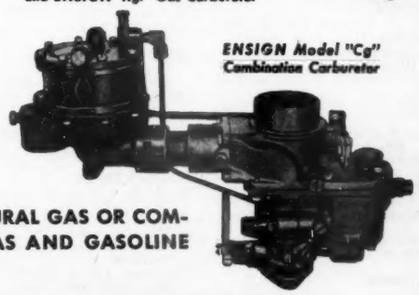

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MICHIGAN OPERATIONS

Activity Slows Down With Deep Tests in Prospect

By OTTO C. PRESSPRICH

SAGINAW, Mich., Mar. 17.—With development now slowest in years—out of six completions last week, five were dry holes—activity was greatest in Clare County. Although that area has 13 wells drilling, only one, a wildcat test in Sheridan Township, is near completion.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Allegan County	1	75	1,607
Dry holes: Allegan County	3	.....	4,061
Others	2	.....	5,625
Total	6	.....	11,283

Interest in deep testing was reflected recently in the auction of oil and gas leases on approximately 24,000 acres of state-owned land, bringing the state a bonus of $11,502. Prices ranged to $5 an acre in Buckeye-Gladwin, $6 in Mills-Ogemaw. It is understood Trenton-St. Peter formation tests are on the docket for both counties.

Gulf moved heavy equipment to 1 Bateson, deep discovery in Bay County to resume operations. Engineers hope the sidetracking will permit completion to the gas-oil pay at 7,776 ft., and possibly permit deeper drilling. Original objective was 10,000 ft. to penetrate Trenton or St. Peter formations.

Four of the week's completions were in Allegan County. Results slowed the pace by which completions in February increased to 77, compared to 60 in January. More than a score were wildcats, all failures.

Testing of water samples held up definite information concerning American Drilling Co. 1 Skidmore, a wildcat in Crystal-Oceana. The test was reported to have produced 150 bbl. of oil and some water in a 24-hour period, promising a new shallow Traverse pool. The water analysis was to determine whether source was from oil-producing zone or shallow sand.

Twelve drilling permits were issued during the week by the Conservation Department. Clare County received four, Allegan and Arenac each received two and one each went to Montcalm, Kent, Missaukee and Van Buren.

MICHIGAN COMPLETIONS

Allegan County

Salem Township: H. R. Fothergill 1 Wabeke, SE SW SW 11-4n-13w, 75 bbl., acid, T.D. 1,607 ft.

Trowbridge Township: Clapsaddle & Harris 1 Cook, NE NW SW 19-1n-13w, dry, T.D. 1,361 ft.

H. C. Williams 1 Belden, SW SE SW 19-1n-13w, dry, T.D. 1,340 ft.

S. L. Conant 2 Russen, NW NW SW 28-1n-13w, dry, T.D. 1,360 ft.

Mason County

Sheridan Township: Manistee Development Co. 1 Macri, NW NW SE 13-19n-15w, dry, T.D. 3,700 ft.

Muskegon County

Dalton Township: Edward B. Strom 1 Kaule, NW NW NE 16-11n-16w, dry, T.D. 1,925 ft.

West Central Texas Fields

(Continued from Page 78)

vember, shot with 50 qt. early in January, and is now officially gaged. On a 10-hour pumping test the well made 111½ bbl. of oil, or at the rate of about 267 bbl. daily. The top of the Noodle Creek lime was called at 3,007 ft. with the pay from 3,277-3,320 ft.

Jones County.—Between the Stith and Akard fields, Harry Hines and W. D. Brookover 1 A. M. Wimberly, Godwin Subdivision 87, De Witt County School Lands Survey, was awaiting official railroad commission gage after flowing at the rate of 500 bbl. daily on preliminary test. Production is from the Cook at 2,222-40 ft., treated with 2,000 gal. of acid. Production in both neighboring fields is from the slightly deeper Flippen sand level and also the still deeper Swastika level in the Stith field alone.

Only a few miles northeast of this area the Fain-McGaha 1 Moore, T. Maltby Survey, just southwest of the old Hawley field, was declared a failure when water was found in the Swastika section in drilling to 2,538 ft. A show of oil which tested about 50 bbl. daily was passed up at 2,210-23 ft. Completion was attempted from this upper show. However, production decline led to the deepening.

New Wildcat Locations

Brown County.—G. G. Goss has staked location for a 3,000-ft. test on the Crownover tract, 467 ft. from the south and east lines of Section 26, B.B.B.&C. Survey. Starting date was not reported.

Stonewall County.—Leader Oil (formerly W. I. Southern, Inc., Tulsa) has staked location for an outpost test to the Carlisle field opened by W. I. Southern 2 years ago. The new test is to be 3 Carlisle, 2,136 ft. from the north and 2,127 ft. from the east lines of Section 292, Block D, H.&T.C. Survey. It is contracted to 5,250 ft.

Coleman County.—South of Coleman, L. J. Derrick 1 J. W. Vance is a 2,100-ft. wildcat location in the southeastern part of a 562-acre lease in Section 101, E.T. Survey. East of Talpa, W. K. Wood 1 J. Morris is a 3,600-ft. location spotted in the southeast corner of a 45-acre lease in the Greenwood Survey 304.

WEST CENTRAL TEXAS COMPLETIONS

Coleman County

Santa Anna field: Anzac Oil 2 Burk, 1,054,000 cu. ft. gas daily, 3,000 gal. acid, 2,217-68 ft.

Eastland County

Wildcat: A. A. Hutton 1 W. Penn, Sec. 11, Blk. 2, B.B.B.&C. Sur., dry at 571 ft.

Hamilton County

Wildcats: Hensley & Watson 1 Manning, Agapo Gaithan Sur., abandoned location.

Falls Ref. Co. 2 Lund, R. J. Bailey Sur. 51, top Ellenburger 3,853 ft., dry at 3,953 ft.

Palo Pinto County

Wildcats: Wilcox Oil & Gas 1 Rodgers, Sec. 894, T.E.&L. Sur., dry at 3,330 ft.

Georgian Oil 1 Weldon, A. J. Smith Sur. 393, dry at 2,121 ft.

Strawn field: Palo Pinto Oil & Gas 7 Marion, 10 bbl. daily, 30-qt. shot, 3,028-61 ft.

Stephens County

Loving field: Aragon Oil 1 Mueller, 74 bbl. daily, pumping, 6,000 gal. acid, 3,518-53 ft.

WEST CENTRAL TEXAS WILDCAT REPORT

Brown County

G. G. Goss 1 Crownover, 467 ft. from S and E lines Sec. 26, B.B.B.&C. Sur., 3,000-ft. test, first report.

A. J. Stokes 1 B. S. Bayston, 210 ft. from SE line and 2,962 ft. from SW line of Prosper Mangel Sur. 604, 3,000 gal. acid, 1,650-64 ft., no results, S.D.O. at T.D. 1,665 ft.

R. Richmond 1 Petros, SW SW Sec. 7, H.T.&B. Sur., 1,200-ft. test, S.D. 800 ft.

Manning, Richburg & Johnson 3 Charter, SE NW Sec. 19, Blk. 2, B.B.B.&C. Sur., 600-ft. test, location.

Central Tex. Gas 1 E. S. Smith, NE cor. of W 199 acres of S 291 acres of Wm. Guyman Sur. 86, 2,000,-ft. test, moving in material.

J. C. Hart & Son 1-C Pugh, 1,760 ft. from S and 150 ft. from E lines Sec. 40, Moses Little Sur., 1,350-ft. test, drilling 748 ft.

H. P. Evans 1 Starkey, SE SE Sec. 3, H. C. Walker Sur., 1,200-ft. test, S.D. 150 ft.

Callahan County

W. D. Austin 1 I. N. Jackson, 150 ft. from N and W lines, Sec. 2, C.&M. Sur., show gas 832-42 ft., show oil 842-45 ft., H.F.W., 916 ft., drilling 917 ft.

Reeves & Sorrell 1 Young, 1,980 ft. from N and 660 ft. from E lines, Sec. 37, B.B.B.&C. Sur., H.F.W. 1,975-2,000 ft., 6⅝-in. 2,000 ft., S.D.

Ungren & Frazier 1 Rushing, SE SE SE Sec. 116, B.B. B.&C. Sur., 1,500-ft. test, rigging up spudder.

Coleman County

A. P. Heinze 1 J. Kincaid, 467 ft. from N and W lines of E½ SW Sec. 41, B.B.B.&C. Sur., 3,800-ft. test, 20-qt. shot 3,630-45 ft., T.D., show oil and water, T.D. 3,645 ft., P.B. 2,661 ft., tested show oil, gas and water, trying to shut off water, will later acidize.

L. J. Derrick 1 J. W. Vance, 330 ft. NW of old Texas 1 Vance, also in Sec. 101, E.R. Sur., 2,100-ft. test, location.

R. H. Murray 1 Morris, 467 ft. S and W of NE 160 acres of J. Greenwood Sur. 304, cleaning out with spudder, T.D. 1,305 ft.

Cooper Brothers 1 McClure, 1,100 ft. from S and 2,400 ft. from W lines of T. R. Frizzell Sur. 711, 2,800-ft. test, fishing 260 ft.

Comanche County

Campbell 1 Stark, SW part of Asa Hoxey Sur., S.D. 145 ft., repair, will set 6⅝-in.

Concho County

Floyd C. Dodson 1 Robert Wilson, Thomas Green Sur., 10 mi. SW Eden, show oil and gas 3,792-95 ft., 3,819-20 ft., at 3,828-29 ft., showed 1 baller water per hr., correstion, T.D. 3,829 ft., S.D.O.

Eastland County

Hickok Oil 1 Luse & Gray, NE Sec. 486, S.P. Sur., Ordovician test, ¾ mi. SE of new McElreath field, running 7-in., show gas 3,688-89 ft., tested 781,000 cu. ft. daily, T.D. 3,689 ft.

Douglas Tomlinson, Jr., et al 1 Bennett, NE NE NE Sec. 6, Blk. 2, H.&T.C. Sur., 900-ft. test, show oil 890-96 ft., 350 ft. O.I.H. in 12 hr., testing.

Fisher County

F. A. Stephenson 1 Mayberry, SE SW Sec. 56, Blk. 1, H.T.&B. Sur., 3,400-ft. test, cored 3,285-3,302 ft., recovered sand showing oil, top Swastika 3,277 ft., 40-gravity oil, deepened to 3,315 ft., 1,500 bbl. oil in storage, making est. 200 bbl. per day, T.D. 3,329 ft., P.B. 3,315 ft., S.I.

General Crude Oil 12 Flanigan, center of old Royston field, top Ellenburger 6,094 ft., drilling 6,515 ft. and carrying 3,500 ft. sulfur water.

F. A. Stephenson 1 Humphries, NW NW Sec. 49, Blk. 1, H.T.&B. Sur., 2,350-ft. test, top lime 2,985 ft., dry lime 2,985-92 ft., T.D., waiting on spudder.

P. R. Long 1 W. F. Davidson, SE NW Sec. 59, Blk. 1, H.T.&B. Sur., 4,300-ft. test, S.D. 100 ft.

Landers & Eisele 1 Mose Newman, SE NW Sec. 8, Blk. 20, T.&P. Sur., 10-in. 301 ft., oil lime 3,416-34 ft., treated and tested only mud, 7-in. 3,414 ft., testing, T.D. 3,434 ft.

P. R. Long 1 Maberry, SE or. A. A. Spring Sur., 2 mi. SW of McCaully, show oil 3,250-79 ft., waiting on spudder.

Hamilton County

A. J. Caldwell 1 W. W. Jones, 1,002 ft. from NE, 150 ft. from SE lines, W. H. Crowder Sur., correction, S.D. 2,999 ft.

Gunther & Smith 1 Thompson, 467 ft. from SE and 4,533 ft. from SW lines of Rhody Kennedy Sur., spudded and S.D.

Groover & Rose 1 Joe Fuqua, 1,600 ft. from W and 640 ft. from S lines of J. W. Bowers Sur., 3,000-ft. test, location.

Jones County

H. Hines and W. D. Brookover 1 A. N. Wimberly, SW SW Subd. 91, De Witt C.S.L. Sur., 2,500-ft. test, saturation 2,215-33 ft., 7-in. 2,215 ft., est. 50 bbl. daily, treated 2,000 gal. acid, flowed 16 bbl. hourly for 3 hr., S.I., T.D. 2,333 ft.

Fain-McGaha Oil 1 Moore, 660 ft. from NE and 1,320 ft. from SE of S 107 acres of J. D. Maltby Sur. 252, 2,500-ft. test, saturation 2,215-21 ft., est. 25 bbl. oil per day, naturally, flow declined from 35 bbl. oil per day to 10 bbl. oil per day, drilling 2,477 ft.

Danciger Oil & Ref. 1 Jacob Foster, SE¼ W 100 acres, SW¼ Sec. 13, Blk. 13, T.&P. Sur., 3,000-ft. test, drilling 1,523 ft.

J. C. Hunter 2 Minter, N½ Lot 7, Sec. 192, Robert Smith Sur., 2,400-ft. test, drilling 1,782 ft.

Fain-McGaha 1 Cooper, SE SE SW Sec. 20, Blk. 15, T.&P. Sur., 4,000-ft. test, top Clear Fork 1,928 ft., drilling 2,120 ft.

W. W. Fondren 1 C. P. Rogers, 126-acre tract in N½ Sec. 32, Blk. 18, T.&P. Sur., 3,100-ft. test, rigging up spudder.

Groover & Rose and Jones & Stasney 1 Owens, SE SE Sec. 46, Blk. 15, T.&P. Sur., 2,000-ft. test, moving in material.

Menard County

W. F. Sorrell 1 Wilkerson, NW cor. Sec. 1549, C. A. Zimmerman Sur., Abst. 827, 4,000-ft. test, correction, 15½-in. at 190 ft., S.D. repair 300 ft.

McCulloch County

W. J. Willard 1 E. B. Garrett, 467 ft. from N and E lines of Sur. 934, Abst. 1196, 3,000-ft. test, drilling 727 ft.

Clark 1 Lively, SE cor. Sec. 931, H. F. Hetzfeldt Sur., 650-ft. test, 7-in. 820 ft., cleaning out at 825 ft.

Palo Pinto County

Elgin & Watson 1 Watson, NE NW Sec. 10, Blk. 2, T.&P. Sur., S.D. 4,065 ft.

Hickok Prod. and Reynolds 1 J. R. Halsell, 467 ft. from S and W lines, Sec. 92, B.B.B.&C. Sur., Abst. 105, 5,500-ft. test, drilling 2,335 ft.

W. K. Gordon 1 Noland, NE SE Sec. 86, Blk. 3, T.&P. Sur., 3,500-ft. test, 10-in. 1,414 ft., drilling 1,860 ft.

Shackelford County

R. H. Roark 1 Lee, 1,170 ft. from N and 2,790 ft. from E line, Sec. 37, Blk. 12, T.&P. Sur., 1,250-ft. test, S.D. 1,152 ft.

B. & F. Cotton Warehouse 1 Snyder, NE SW NE Sec. 32, L.A.L. Sur., 800-ft. test, location.

J. F. Baker and M. E. Daniels 1 Davis, SE NW Sec. 3, Blk. 13, T.&P. Sur., 1,700-ft. test, location.

E. M. Doloach 1 Cook, SE SE NE Sec. 64, E.T. Sur., location.

Georgian Oil 2 Black, 1,290 ft. from SE and 540 ft. from SW lines, Sec. 391, T.E.&L. Sur., spudded and S.D.

Grossenbacher & Hagerty 1 Elliott, SW SW Sec. 12, L.A.L. Sur., show oil 830-32 ft., 300 ft. O.I.H. but tested water, T.D. 832 ft.

Stonewall County

Leader Oil 3 Carlisle, 2,136 ft. from N and 2,127 ft. from E lines of Sec. 292, Blk. D, H.&T.C. Sur., 5,250-ft. test, first report.

Taylor County

Ce-Beth Oil 1 City of Abilene, south shore of Lake Abilene on city property, 4,000-ft. test, T.D. 2,480 ft., top lime 2,443 ft., show oil 2,453-78 ft., rigging up to drill deeper.

MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1941 High	1941 Low	Week ended Mar. 15 High	Week ended Mar. 15 Low	Week ended Mar. 15 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1939	Com. sh. earn. 1938	1940 High	1940 Low	1939 High	1939 Low
50⅜	44	46¼	45⅜	46	Amerada Corp.	788,675	N.P.	50cQ	1-31-41	$2.00	$1.56	$2.07	58½	38½	74½	50
24¼	20¾	22¼	21⅛	22¼	Atlantic Refining	2,663,999	$25	25cQ	3-15-41	1.00	1.66	1.40	27⅛	18¼	24¾	18⅛
10½	8	9	8¾	8⅜	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.50	1.39	—.85	16⅝	8½	21	10¼
9⅝	7⅝	8¾	8	8⅛	Barnsdall Oil Co.	2,558,779	$5	15c	3-10-41	.60	.76	1.26	13⅜	7⅛	19½	11⅛
6	5⅜	5⅝	5⅜	5½	Consolidated Oil Corp.	13,751,726	N.P.	12½cQ	2-15-41	.72½	.55	.55	8⅛	5½	9⅞	6½
20½	17⅜	18⅜	17⅜	18¼	Continental Oil of Delaware	4,682,572	$5	25cQ	3-31-41	1.00	1.35	1.10	25	16⅛	31½	19⅞
4½	3½	3⅞	3⅝	3¾	Houston Oil	1,098,618	$25	....	10-17-30	....	.43	.83	6⅞	3⅜	9⅜	4½
11⅜	9¾	10¼	10	10	Lion Oil Refining	435,815	N.P.	25cQ	4-15-41	1.00	1.50	2.09	14⅜	9	18⅛	10
15⅛	13⅜	13⅞	13½	13½	Mid-Continent Petroleum	1,857,912	$10	40c	12-2-40	.80	1.42	.56	17⅜	11½	18	11⅛
11	9⅜	10	9⅝	10	Mission Corporation	1,378,645	$10	25c	12-20-40	.25	.87	1.04	11¾	7⅛	14⅞	8¾
6⅝	4⅞	5¾	5⅜	5½	National Supply	1,155,517	$10	....	12-22-37	....	—.87	—.79	9¾	4⅝	15½	5⅜
7⅞	6¾	7	6¾	6¾	Ohio Oil Co.	6,563,377	N.P.	25c	12-14-40	....	—.10	.25	8¾	5⅜	10½	6
7⅛	5½	6⅜	5⅝	5⅝	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	....	.81	1.22	8⅞	5½	11⅞	7
8½	7¼	7½	7½	7½	Pan American Pet. Trans.	4,702,945	$5	25c	12-21-40	.25	1.10	.08	10½	6¾	8⅜	5
41¼	35⅜	38	26¼	38	Phillips Petroleum	4,449,052	N.P.	50cQ	3-1-41	2.00	2.21	2.03	41⅜	27⅛	46½	31¼
16⅞	14⅜	15	14½	15	Plymouth Oil Co.	1,038,633	$5	30c	3-31-41	‡1.30	2.38	2.59	22¾	15	24	17⅛
8⅞	7	7¾	7⅜	7¾	Pure Oil Co.	3,982,031	N.P.	25c	12-20-40	.25	1.11	.38	11½	6¾	11¾	6⅛
9	7¼	8⅞	8⅝	8¾	Richfield Oil Corp.	4,010,000	N.P.	50c	12-21-40	.50	.65	.51	9¼	5⅞	10¼	6⅝
15⅜	12½	13¾	13	13	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	3-15-41	1.00	1.40	1.52	20	11	24⅜	15½
12⅜	10⅛	12⅜	11¼	11¾	Shell Union Oil	13,070,625	N.P.	50c	12-20-40	.75	.77	.72	13⅛	7⅝	17¼	9⅞
22⅜	18⅞	22	21⅞	21⅞	Skelly Oil	995,349	$15	50c	12-20-40	1.25	1.99	2.27	23¼	12¼	29½	15½
9¼	8¼	8⅞	8½	8⅝	Socony-Vacuum	31,206,071	$15	25cSA	3-15-41	.50	1.10	1.29	12½	7⅛	15⅛	10¼
20¾	17⅞	19	18¼	19	Standard Oil of California	13,003,953	N.P.	25cQ	3-15-41	1.00	1.38	2.22	26⅛	16¼	33⅝	24¼
27⅞	25½	26⅛	25½	25⅞	Standard Oil (Indiana)	15,272,020	$25	25c	3-15-41	1.50	2.23	1.82	29	20¾	30	22¾
36½	33	35⅝	34⅛	35⅛	Standard Oil of New Jersey	27,280,998	$25	75c†	12-16-40	1.75	3.26	2.86	46½	29⅞	53½	38
40⅛	34¼	37½	36⅞	36⅞	Standard Oil of Ohio	753,740	$25	37½c	3-15-41	2.00	6.64	1.81	41¾	26¼	32¾	17
58¾	53	53½	52	52	Sun Oil	2,434,863	N.P.	25cQ§	3-15-41	*1.00	2.74	1.07	65⅞	46¾	66	45¾
1¾	1⅜	1½	1⅜	1½	Superior Oil Corp.	1,388,979	$1	10c	12-28-40	.10	.04	.24	2½	1⅜	3⅝	1⅜
40¼	34½	35½	34½	35¼	Texas Corp.	10,876,139	$25	50cQ	4-1-41	2.00	3.02	2.13	47⅝	33	50¾	32½
6	5⅜	3⅛	2⅞	3⅛	Texas Gulf Producing Co.	888,147	N.P.	10c	12-14-40	.20	.69	.86	4¼	2½	5¾	3¼
6	5¼	5½	5⅜	5½	Texas Pacific Coal & Oil	888,236	$10	10c	3-1-41	.40	1.00	1.16	8⅝	5⅜	11⅜	7
10⅜	9⅜	9⅝	9½	9½	Tide Water Associated	6,371,827	$10	15c	3-3-41	.70	1.05	1.28	12	8¾	14¼	9½
14½	12¾	13½	13⅛	13⅛	Union Oil Co. of California	4,666,270	$25	25c	2-15-41	1.00	1.25	1.47	17½	12	19¾	15⅛
29¾	25⅝	28¼	27½	28	Union Tank Car Co.	1,177,381	N.P.	50c	3-3-41	1.75	2.07	1.16	29⅞	22¾	24¼	20⅛
1⅞	1⅝	1⅝	1⅝	1⅝	Wilcox Oil & Gas	470,768	$5	10c	2-15-40	....	.77	.52	3⅝	1¾	4¼	2⅜

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 6 per cent in stock. —Deficit.

New York Curb Exchange

1941 High	1941 Low	Week ended Mar. 15 High	Week ended Mar. 15 Low	Week ended Mar. 15 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1939	Com. sh. earn. 1938	1940 High	1940 Low	1939 High	1939 Low
7	5⅛	6⅛	5¾	6	American Republics Corp.	1,308,049	$10	25c	12-18-40	....	$0.14	—$0.22	10¾	4½	11¾	5½
1¾	1⅜	1½	1⅜	1½	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37	....	—.95	—.14	3¼	1⅜	7¼	2⅛
40¼	38	38	38	38	Buckeye Pipe Line Co.	200,000	$50	$1	3-15-41	$4.00	3.13	2.36	43	28	34¾	26½
110¼	103¾	103¾	103¾	103¾	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	3-31-41	6.00	7.87	5.32	117	95	130	108⅝
5⅛	3¾	4¾	4⅜	4⅜	Cities Service (new)	3,703,978	$10	....	6-1-32	....	.68	.23	6¾	4	9¼	4¼
⅞	⅝	..	..	..	Cosden Petroleum	465,332	$1	....	.....	....	....	....	2⅛	⅝	2¼	⅛
15¼	12½	14⅜	13	13	Creole Petroleum	6,974,356	$5	50cSA†	12-16-40	1.00	1.38	1.64	24¼	11⅝	28	16¾
4¼	3¾	4⅝	4½	4½	Darby Petroleum	351,390	$5	25cSA	1-15-39	....	.03	.69	4⅜	2⅞	7⅛	3⅝
1⅛	1	1	1	1	Derby Oil & Refining	263,162	N.P.	....	.....	....	—.37	—.91	2	¾	2⅝	1⅛
28⅜	21½	..	..	..	Eureka Pipe Line	50,000	$50	$3.50†	2-1-41	2.25	.63	—.37	31	20¼	23	15⅛
33½	31	32½	32	32½	Gulf Oil Corp.	9,076,202	$25	25cQ	4-1-41	1.25	1.69	1.43	39⅞	25⅛	45⅛	29¼
63	53¼	55¼	53½	55¼	Humble Oil & Refining	8,987,840	N.P.	37½c	4-1-41	2.00	3.33	3.98	68	47⅛	71	52½
6⅞	5¾	6½	6⅜	6⅜	Imperial Oil of Canada	26,965,078	N.P.	25c	12-2-40	.62½	.71	.96	12⅜	5⅝	17	11⅝
3⅞	3⅜	3¼	3¼	3¼	Indiana Pipe Line	300,000	$7.50	20c	11-15-40	*2.80	.33	.47	7¾	3	7¼	5½
10⅜	8⅞	9½	9	9	International Petroleum	14,324,088	N.P.	30c	12-21-40	1.25	1.19	1.98	10¾	8¼	27½	17
2⅝	1⅜	2¼	2⅛	2⅛	Kirby Petroleum Co.	500,000	$1	10c	3-15-41	....	.06	.14	2¾	1⅝	3¾	2⅛
10⅛	9⅜	9⅞	9½	9¾	Lone Star Gas	5,518,347	N.P.	20c	4-22-41	.70	.98	.88	10¾	7⅝	10½	7⅛
4⅝	4⅛	4⅝	4⅛	4¼	Louisiana Land & Exp.	2,966,762	$1	10c	3-15-41	.35	.22	.45	6¼	3¾	7¾	4
10	9½	..	..	..	Margay Oil Corp.	149,943	N.P.	25cQ	4-10-41	1.00	1.52	2.28	17	9¼	17	14½
8	7	7½	7¼	7½	Midwest Oil Co.	998,474	$10	45c	12-16-40	.90	.99	.93	8½	6½	8¾	6⅝
5¾	5⅛	5¼	5¼	5¼	Mountain Producers	1,593,584	$10	30cSA	12-16-40	.60	.70	.62	6¼	4⅞	6	4⅞
12⅜	11	12	11⅝	11⅝	National Fuel Gas	3,810,183	N.P.	25cQ	1-15-31	1.00	.95	.84	13⅛	10	14	11¼
12¾	10¼	11⅛	11⅛	11⅛	National Transit	509,000	$12.50	50c	12-16-40	1.00	.91	.88	12½	8¾	9½	7¼
1⅛	1	1¼	1⅛	1⅛	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1¼	¾	1⅜	1
7¾	6⅝	7¾	7⅜	7¾	New York Transit	100,000	$5	30c	5-15-41	.60	.88	.16	7¾	5¼	6	4
9⅜	8¼	8	8	8	Northern Pipe Line	120,000	$10	40c	12-2-40	.80	.31	.24	9⅞	6	7	4½
3⅜	2⅝	3⅞	3½	3⅞	Pantepec Oil	2,856,872	$1	....	.....	....	....	....	5½	2½	7⅝	4
1½	1	1⅛	1⅛	1⅛	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.70	.17	3¼	1	5	1¼
2½	2⅛	..	..	..	Ryan Consolidated	298,931	N.P.	10c	12-28-40	....	.16	.29	3	1½	3	1⅞
8	7	7	7	7	Southern Pipe Line	100,000	$10	25c	3-3-41	.50	.25	—.27	11¾	4¾	4⅞	3½
39¾	37¼	37⅜	37¼	37⅜	South Penn Oil	1,000,000	$25	37½c	3-28-31	2.50	2.84	1.44	44	28	40½	26¾
30½	24½	..	..	..	Southwest Penna. Pipe Lines	35,000	$50	50c	4-1-41	6.50	2.06	—.41	35	21	23	18
20⅜	18	18⅞	18⅜	18⅞	Standard Oil of Kentucky	2,604,790	$10	25c	3-15-41	1.30	1.53	1.45	20⅞	16½	20⅛	17¼
1¾	1⅜	1¾	1½	1¾	Sunray Oil	1,975,876	$1	5c	12-20-40	.10	.25	.23	2	1⅜	2¾	1¾
3	2¾	3	3	3	Texon Oil & Land	936,024	$2	10c	12-30-40	.40	.49	.56	3⅛	2	4	2⅝
2½	2¼	2⅝	2½	2½	Transwestern Oil Co.	750,000	$10	....	.....	....	—1.42	.12	3⅜	2	6	2½
1⅝	⅝	¾	¾	¾	United Gas Corp.	7,818,959	$1	..	.....	...	—.55	—.51	2⅛	¾	3⅜	1⅛

*Includes $2.50 capital distribution. †Includes extras. —Deficit.

Personal Paragraphs

SID MILLINGTON has been appointed sales manager of Fletcher Oil Co., succeeding O. H. MULLER, JR., who recently resigned to become sales manager of Douglas Oil & Refining Co., in Los Angeles, Calif.

LAWRENCE A. APPLEY, in charge of education and training for Socony-Vacuum Oil Co., Inc., has been appointed expert consultant to the secretary of war in the training of civilian personnel for the War Department. He has been granted a leave of absence by Socony-Vacuum and began his work last week.

J. E. BRANTLY, president of Drilling & Exploration Co.; LOUIS CHAPPUIS, consulting geologist and petroleum engineer, and ELMER DECKER, president of the California Nomads, discussed the growing importance of Latin America over a radio hookup at Beverly Hills, Calif., March 15. The occasion was Foreign Trade Week of the Chamber of Commerce.

J. E. AMIS, producer and drilling contractor of Tyler, Tex., has opened a branch office in Evansville, Ind., with R. D. DONNELLY in charge of eastern operations.

J. V. HOWELL, of Howell & Fotiades, Wabash County, Illinois, producers, is under treatment in a hospital in San Antonio, Tex.

C. P. C. BERESFORD has been made general manager of Socony-Vacuum Oil Co. de Colombia, Bogota. Directors of the company are JOHN C. CASE and C. A. TORRES.

FRANK PHILLIPS, chairman of Phillips Petroleum Co., Bartlesville, Okla., and C. E. BURLINGAME, oil and gas operator, have returned home from a vacation in Arizona.

D. E. BUCHANAN, president of Hanlon-Buchanan, Inc., has accepted the general chairmanship of the entertainment committee for the mid-year meeting of the American Petroleum Institute which will be held in Tulsa April 19-22.

W. N. FINNEGAN, former assistant to the president of Humble Oil & Refining Co., Houston, Tex., was honored guest at a dinner at the Houston Club last week, which was attended by 200 employes of the Humble company. Mr. Finnegan resigned from Humble to enter the oil business for himself. He will shortly open an office in Houston.

JOSEPH A. COSTELLO has been appointed manager of the New York division, Ethyl Gasoline Corp., succeeding RICHARD C. MURPHY, recently named western regional manager.

H. F. SINCLAIR, chairman of the board; D. T. PIERCE and D. M. ENGLE, Consolidated Oil Corp., and EARL W. SINCLAIR, president, Sinclair Refining Co., have returned from Venezuela where they visited the first producing well of the Venezuelan Petroleum Co., Consolidated subsidiary, in the State of Monagas.

F. S. SHOUP, Los Angeles, Calif., district manager; W. A. REANIER, domestic sales manager; A. A. HOCK, general credit manager; HAROLD R. DEAL, manager of advertising; J. A. RANSFORD, supervisor of sales education, and WALTER BRUNN, merchandising manager of Tide Water Associated Oil Co., held a general sales meeting in Los Angeles this week. All but Mr. Shoup maintain offices in San Francisco.

RICHARD SACHSE, director of natural resources of the State of California, is expected to be appointed to the state Railroad Commission in the near future by Gov. Culbert Olson.

R. O. JONES, for several years assistant manager of foreign sales of Union Oil Co., has been appointed general manager in charge of the company's operations in Central and South America. In his new position Mr. Jones will maintain offices in Panama City, Republic of Panama.

DEAN SHELDON, a member of the petroleum engineering department of Union Oil Co. for several years, resigned recently to accept a position with R. E. HAVENSTRITE and in his new capacity will direct engineering work on the Del Valle structure where his employer discovered a new field late last year.

JOHN E. SKEHAN has been named a vice president of the Standard Oil Co. of New Jersey (Delaware), domestic operating subsidiary of the Standard Oil Co. (New Jersey). Mr. Skehan is sales manager and a director of the company. GEORGE H. METTAM, manager of the New Jersey refinery, has been elected a director of the Delaware company.

R. W. BLACK, Standard Oil Co. of New Jersey, chairman of the American Petroleum Institute regional committee on safeguarding oil storage; J. L. RISINGER, safety supervisor, Socony-Vacuum Oil Co., Inc., and C. A. MILLER, chairman, petroleum section, National Safety Council, will speak at the twelfth annual meeting of the Greater New York Safety Council April 25. A. H. VINEYARD, Shell Oil Co., Inc., will preside.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Considerable work has been done in Okfuskee County, Oklahoma, but the best results have been far from satisfactory, although a few operators have completed some fairly good wells.

Families of oil men stationed in Mexico are arriving at Galveston. It is reported that some of the Penn-Mex Fuel Co.'s property at Tuxpam has been destroyed by bandits.

20 YEARS AGO

The first real oil well in the El Dorado, Arkansas, field was completed when a 3,000-bbl. well came in a quarter of a mile north of the discovery well.

The sixth annual meeting of the American Association of Petroleum Geologists was held at Houston, Tex. Registrations totaled 270 geologists and engineers.

Although Venezuela is potentially a large producer of petroleum, there is little development and actual production is small.

10 YEARS AGO

Producers of oil are receiving about $1,300,000 less per day for their oil than they were a year ago.

The linking of the Bateman and Lathrop pools in East Texas is assured by a new test. The field is approximately 14 miles long. There are 59 wells in the East Texas field with 153 drilling.

Mid-Continent 36-gravity crude is selling at 59 cents.

J. L. STEWART, Toronto, Ont., general manager of the Canadian Automobile Chamber of Commerce, has been appointed deputy oil controller for Canada, assisting G. R. COTTRELLE, federal oil controller.

BRUCE H. ROBINSON, General Petroleum Co., Los Angeles, Calif., was elected chairman of the Pacific Coast district, Division of Production, American Petroleum Institute, at the recent meeting of that body. E. L. DAVIS, Texas Co., was named vice chairman for Los Angeles Basin; R. W. BORDEN, Barnsdall Oil Co., vice chairman for coastal district, and

B. H. ROBINSON

PAUL E. LEHR, Shell Oil Co., Inc., vice chairman for San Joaquin Valley. W. G. COREY, Pacific Gear & Tool Works, Los Angeles, is treasurer, and D. S. KILGOUR, California Oil and Gas Association, is secretary.

C. E. YAGER, vice president, Texas Pacific Coal & Oil Co., Fort Worth, Tex., has been made district representative for the American Association of Petroleum Geologists.

R. M. BAKER, of Aladdin Drilling Co., former operator in Kansas, California and New Mexico, has transferred operations to Illinois fields, with field headquarters at Evansville, Ind.

A. A. HORWITZ, Wichita Falls, Tex., independent producer, has been made chairman of the North Texas Oil and Gas Association committee assembling scrap iron for donation to Great Britain.

T. C. WILLIAMS, JR., formerly of Dallas, Tex., will move with his family to Midland, Tex., where he will be a petroleum engineer for the District 8 office of the Oil and Gas Division of the Texas Railroad Commission.

A. V. RITCHIE, Texas Co., New York City, will address the seventh annual chemurgic conference at Chicago, March 28, on "Agricultural Products in the Petroleum Industry." Mr. Ritchie is with the Texas Co. research division.

FRED JONES, material man for Stanolind Oil & Gas Co., Brownfield, Tex., will join the U. S. Army very shortly, and MR. SHIP, employed by Stanolind at Iraan, Tex., will be moved to Brownfield to take the place of Mr. Jones.

ARNOLD S. BUNTE, who has been in charge of the geological work for Heller Co., Tulsa, has resigned to become geologist for Vickers Petroleum Co., Wichita, Kans. Mr. Bunte spent 12 years with Shell. C. L. HENDERSON heads the Vickers company.

Tanker Bears Name

E. H. Blum, for whom a new 19,405-ton oil tanker is being named by Atlantic Refining Co. this week, is vice president and director of Atlantic, and is in charge of the company's oil-production activities.

E. H. BLUM

Mr. Blum's connection with the Atlantic began immediately upon his graduation from high school in Philadelphia, Pa., in 1905. Since that time his association with the company has been continuous. During the first several years after starting with Atlantic, he studied civil-engineering subjects at Temple University night school. For the first few years, he worked in the drafting room and engineering department, and was transferred to Atlantic Oil Producing Co. shortly after that company was formed in 1915, at which time Atlantic started its own crude-oil producing activities. Mr. Blum was transferred to Dallas, Tex., early in 1919, as general manager of domestic producing activities, and 10 years later he was appointed vice president and general manager of Atlantic Oil Producing Co.

On September 22, when this company was eliminated, Mr. Blum was appointed a vice president of Atlantic Refining Co., and in May 1937 was elected to the board of directors of this company.

Mr. Blum is a member of the Dallas Petroleum Club, Dallas Country Club, Brook Hollow Country Club and Dallas Athletic Club. His institute memberships include the American Petroleum Institute and American Institute of Mining and Metallurgical Engineers.

H. B. SMITH, executive vice president of Sinclair Prairie Oil Co., Tulsa, was called to El Dorado, Kans., last week for the funeral of his mother, who died there March 11.

LELAND P. HARRINGTON, comptroller of Pure Oil Co.'s southwestern producing division, has recently received a 35-year service pin. FRANK P. HOUSLEY has received a 15-year service pin.

JOHN ASBURY, chief scout for Shell Oil Co., Inc., eastern division, has resigned to accept a position as special representative at Centralia, Ill., for Smith Petroleum Co. His resignation became effective March 15.

DR. HORACE DAVIS THOMAS, associate professor of geology at the University of Wyoming, Laramie, has been confirmed as the new state geologist to succeed DR. SAM H. KNIGHT, who recently resigned.

DIXIE MORRIS, of the Union Producing Co., Houston, Tex., within the next few weeks will be transferred to Southwest Texas. This transfer was made necessary by the fact that the Union company lost two southwest district men to the Army.

PARKER L. MELVIN, president, and J. E. MOORHEAD, executive secretary, Pennsylvania Crude Oil Association, held a conference at Bradford, Pa., last week to make arrangements for the forthcoming meeting of the association.

When MERRILL W. BLAIR, president of Wichita Falls (Tex.) Chamber of Commerce, finished his term and handed over the reins to his successor, the first act of the latter was to draft Mr. Blair for continued service. Mr. Blair's brilliant work was praised at the annual banquet.

D. H. BAKER has resigned as secretary of the Pan American Petroleum & Transport Co. and subsidiaries, and as director of the Pan American Pipe Line Co. due to ill health. He will be succeeded in the former capacity by L. M. WILSON, who has been with Pan American for nearly 20 years in charge of various insurance and tax matters, and in the latter by E. R. TURNER, of Houston, Tex., vice president of the pipe-line company.

Shifts: T. W. HAUGHT, superintendent, Ohio Oil Co., from Bay City, Tex., to Falfurrias, Tex.; R. F. SCHERMERHORN, president, Schermerhorn Oil Co., from Big Spring, Tex., to Dallas, Tex.; ROBERT M. FRANKS, geologist, Navidad Oil Co., from Houston, Tex., to Alice, Tex.; P. G. WILLIAMS, superintendent, Pure Oil Co., from Lake Charles, La., to Bell City, La.; B. P. BAYLISS, engineer, Shell Oil Co., Inc., from Great Bend, Kans., to Columbus, Ohio; WILLIAM J. DEVANEY, engineer, Cities Service Oil Co., from Bartlesville, Okla., to Russell, Kans.; GERALD McGREW, engineer, Cities Service Oil Co., from Bartlesville, Okla., to Iola, Kans.; J. F. NAGLE, manager, gas contract department, Skelly Oil Co., from Tulsa to Kansas City, Mo.; J. C. JACKSON, geologist, Stanolind Oil & Gas Co., from Leesville, La., to Many, La.; LEO RANNEY, president, Ranney Oil Mining Co., from McConnelsville, Ohio, to Columbus, Ohio.

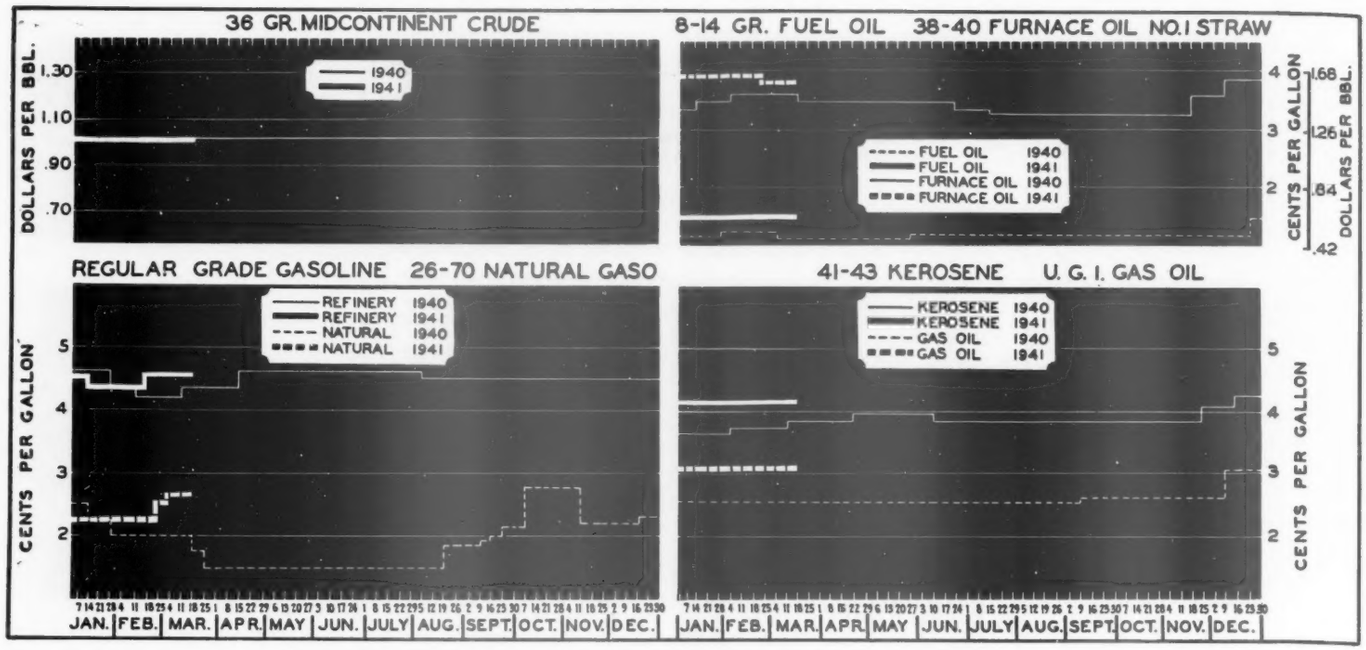
HAROLD S. THOMAS, independent petroleum geologist, former paleontologist for Tidal Oil Co. and chief geologist for the Slick-Urschel interests and the Transwestern Oil Co., has established an office in Lincoln, Neb., where he will continue to operate as an independent consultant.

H. R. CULLEN, Houston, Tex., producer, donated 300 uniforms to the 300 members of the Seventh Battalion of the Texas Defense Guard, an organization created to supplement the National Guard when that unit was called into active service.

An item on these pages in the issue of November 7, 1940, telling of the ninety-sixth birthday of D. O. MORAN, of Oil City, Pa., brought a letter of congratulations to Mr. Moran from WALTER M. SMALL, who is associated with the Teleajen refinery of Romano-Americano at Ploesti, Rumania. However, the letter arrived too late for Mr. Moran died on January 1.

C. L. ROBINSON, engineer with Gulf Oil Corp., Fort Worth, Tex., has been elected president for the new year of the Fort Worth Petroleum Engineers Club. JOHN A. WILMOST, Texas Co., is the new executive vice president; R. W. TESCH, JR., Stanolind Oil & Gas Co. engineer, is first vice president; S. H. CASTEEL, Landreth Production Co., is second vice president, and G. E. OLLER, JR., Parkersburg Rig & Reel Co., is secretary-treasurer. G. H. CARD, engineer with Stanolind Oil & Gas Co., is the retiring president.

WILLIAM M. PECK, a veteran in many producing divisions of Pure Oil Co., has moved to Tulsa to become assistant to J. D. McNUTT, manager of the southwestern producing division. He succeeds K. A. COVELL, who has been sent to Fort Worth, Tex., as acting manager there while R. W. McILVAIN, JR., is in the Army. REX LUDICKE and JOHN SLOUGH have been transferred to the Texas producing division from the Tulsa geological offices, while F. B. McCARY and A. B. TAYLOR have been brought into the southwestern division from the Van field office in the East Texas fields. HERMAN L. GLASBY, of the southwestern producing division, is now in service at Fort Sill, Oklahoma.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Gasoline Prices Quoted to Interior Resellers Given Another Advance

By H. STANLEY NORMAN

THE clearer and firmer tone of the gasoline market gained quality and volume this week as demand continued its record-breaking upward surge.

A few inland refiners, who are normally on the selling end of the gasoline market until the late months of summer, are buying from spot sellers to cover immediate commitments for prompt delivery.

Abnormally early development of spot-market buying on the part of refiners is putting a "punch" into the trade that has had no counterpart in recent years. Gasoline prices do not fully reflect the improvement in business and the record-breaking volume of current shipments.

Reseller Price Advances

Scarcely any regular gasoline is now available to resellers for less than 4 cents per gallon. Motor fuel of inferior specifications was available to resellers for 3¼ to 3⅜ cents during November and December. The improvement of ⅝ to ¾ cent in the spot-gasoline market gives a more accurate reflection of basic conditions than does the increase of ⅛ to ¼ cent in the larger markets. Rather, the substantial improvement on the low side of the market is a more accurate reflection of the depths to which prices sagged at the mid-winter point.

Market analysts consider that conditions are just now moving into position where a general lift of the market may be anticipated. A large part of the projected-market improvement is based on the record increase in demand which, for gasoline alone in January, was 12 per cent over a year ago. Scattered returns for February and the first half of March indicate that the consumption of gasoline is maintaining its January rate of increase.

Refined Oil Market Barometer

Tangible evidences of improvement in the refinery-gasoline market appear this week over a broader front and in greater intensity. Full adjustment for Gulf Coast primary-market advances has been made in northeastern gasoline prices. Resellers are paying ⅛ cent more per gallon in the interior market, indicating that the Middle West gasoline-price structure may soon rise.

MID-CONTINENT: Interrefinery buying forced to cover commitments.

GULF COAST: Shipments of gasoline continue on enlarged scale.

CALIFORNIA: Refiners decline distillate business at current prices.

PENNSYLVANIA: Neutral oils tightly held. Wax demand brisk.

CHICAGO: Distributors lower distillate-fuel price ¼ cent.

The bulk of business reaching inland refineries is coming from the northern states where defense industries are more advanced than in other parts of the country. Then, too, distributors in the north who bought last year from Illinois plants in close correlation with their immediate needs are working this year with a different set of conditions. When production was advancing each week in Illinois a year ago there was little cause for concern over adequacy of supplies. Furthermore, the situation in March 1940 held little threat of substantial price advances since production in the Middle West was increasing at a faster rate than demand was ascending. Conditions now are almost reversed. Northern distributors are being forced to purchase farther ahead of actual requirements and the percentage of increase in demand is double that of a year ago, indicating higher prices in the future.

Demand for tractor-fuel distillates moved into a higher bracket this week. A few inland refiners have been compelled to cover contract commitments by open-market purchases. In addition to the normal upturn in tractor-fuel demand at this season based on nearness of spring-plowing consumption, the defense program is playing an important role. Construction of camps, roads and airports involves use of much equipment operating on distillates of the tractor-fuel grade.

Natural Gasoline Strong

Natural gasoline is following the same demand-curve contour as motor fuel. Current production is about in balance with prompt demand. The product is in an especially strong market position for Oklahoma and Kansas plant operators. Material from Texas, currently quoted at 2¼ cents for the 26-70 grade, maintains a degree of pressure on the market in Oklahoma and Kansas. The same grade of natural is quoted in Oklahoma at 2⅝ cents per gallon which represents the maximum margin that freight rates will tolerate without conflict from North Texas competition. At 2¼ cents, the Texas market is up ¼ cent from the price prevailing there through the middle of the winter.

Demand for distillate fuel oils in Group 3 territory is gradually receding from the winter peak. Northern purchasers of light fuel are making sporadic inquiries, indicating that buying at the present is on a hand-to-mouth basis.

Reductions in light-fuel-oil prices ranging up to ¼ cent per gallon have been made effective in Chicago, which is the basing point for much of the northern consumption.

Flurry in Tanker Market Lifts Hopes for Eastern-Fuel Rally

By J. P. O'DONNELL

NEW YORK, Mar. 18.—Advances in the tanker-charter market last week that were accompanied by an increase in coastwise clean-tanker rates raised hopes of late-season development in the light-heating-oil market. But at the week's end there was no indication that the tanker-rate advance would be translated into better fuel-oil prices. While fuel oil and kerosene continued dormant, gasoline gave further evidence of its improved position with a number of secondary market advances.

Chartering of approximately 10 tankers last week, all but one or two of them for crude oil from Gulf or Caribbean sources, was the heaviest in some time.

Rates on clean tankers advanced 10 to 12 cents per barrel as a result of the renewed activity in chartering. Vessels for transporting gasoline in the coastwise run are offered at 50 cents, the rate on kerosene is 53 and heating oil 57 cents, covering prompt loading.

Several tankers were chartered for transporting crude oil from Gulf to North Atlantic ports at from 44 to 50 cents per barrel with optional Caribbean loading for an additional 3 cents. Three other tankers were reported to have been chartered for delivering Mexican crude oil from Tampico to north-of-Hatteras points. The reported minimum rate was 50 cents per barrel.

The flurry in the tanker-charter market was attributed in a large measure to the chartering of boats by Great Britain. These boats will transport crude oil and refined products from Caribbean to North Atlantic ports for transshipment to England, thus employing a shorter open-sea route for tankers exposed to submarine attack.

Major marketers are quoting 4 cents per gallon for No. 2 heating oil in the New York Harbor area in tank-car lots, but there have been reports of shading in barge quotations with some quantities reportedly having been disposed of at 3.85 cents, 0.05 cent lower than the price generally quoted. Disposition of this material is reported to have terminated this source of weakness. However, the retail market for heating oil is definitely weaker and with temperatures moderating considerably hopes for a return of better prices before the end of the season are dim despite the fact that inventory reductions on the East Coast in the preceding week were near the heaviest of the season.

The improvement in gasoline was general throughout the eastern area. Motor fuel of 72-74 octane in the New York Harbor area was reported unobtainable at less than 5.75 cents per gallon with all quantities that had been previously offered at 5.5 cents apparently having been removed from the market. The improvement in gasoline-market tone is attributed to a strong demand coupled with its better all-around statistical position.

Dependence of the East Coast market on the Gulf Coast for a large part of its requirements has resulted in the improvement of the former as prices have moved up on the Gulf. Shipments of motor fuel in the coastwise route have been unusually heavy in recent months, but despite this gain, East Coast stocks are running behind those of a year ago. Shipments of gasoline from Gulf to East Coast ports in January totaled 10,035,000 bbl. in contrast to 7,448,000 bbl. in January of 1939. East Coast stocks totaled 19,426,000 bbl. on March 8 this year against 20,111,000 bbl. on the corresponding date of 1940. The reduction in stocks in the first full week of March this year was close to 1,000,000 bbl. Tank-car and tank-wagon prices were advanced at many points throughout New England and northeastern New York early last week. These advances ranged from 0.2 to 1.5 cents and included a number of points at which subnormal prices have been in effect for some time. At the same time tank-wagon kerosene quotations were reduced 0.1 cent at two important western New York centers.

Lubricating-oil prices were active again and low-pour-test Pennsylvania neutrals were advanced a full cent. These quotations range from 23½ to 25½ cents on 200 and from 21½ to 23½ cents on 150 neutral of from 15 to zero pour. This was the first marked improvement in Pennsylvania neutral-oil prices since the slump caused by the loss of export markets early last year. Declining prices reached bottom in June last year and had remained fairly stable since.

Increased buying of neutrals was attributed to the anticipated increase in motor-oil requirements for the coming season, expected to result in the most substantial gain in domestic demand in years. Domestic demand for lubricants set an all-time record of more than 24,500,000 bbl. last year and a further gain is anticipated in 1941. Whether or not this will offset the loss of exports is doubtful for the export volume dropped fully a third in the last half of 1940.

Some refiners are of the opinion that enactment of the lend-lease bill will result in an increase of lubricating-oil exports. The United Kingdom has been the largest buyer of United States lubes and in January took almost a quarter of all our exports. Effect of the enactment of the bill on oil is expected to be limited to products not readily obtainable elsewhere. Since the United States is the principal source of high-quality lubricating oils, it is regarded as possible that Great Britain will step up her purchases in this country. United Kingdom purchases of antiknock material may also benefit, though England is already by far the largest purchaser.

Four Cargoes of Light Fuel Oil Sold on Coast

HOUSTON, Tex., Mar. 18.—Unexpected relief came to the Gulf Coast distillate-fuel oil market this week when Socony-Vacuum purchased four cargoes of this material. The purchases were made from an independent refiner at Corpus Christi. This refiner who has been one of the principal independent sources of supply for this material is now completely sold up until May, it is reported, and with no other pressing supplies among any of the other independents, the market for this product is looking upward.

At least three of the cargoes brought 3 cents a gallon, and with this purchase no more material is available below that price. During the previous week this product was being offered freely from some sources as low as 2¾ cents. The price is firm at the new 3-cent bottom with prospects that further advances are in order.

Gasolines also reflected additional strength with the market for regular grades becoming definitely established at 5 cents. A cargo of 80-research gasoline was moved out of the Gulf Coast during the week at 5 cents and the market appeared to be stiffening. Lower-octane material also was somewhat tighter with a number of inquiries in circulation for material.

So far the improvement of the gas-oil situation has not been reflected in kerosenes, which remain unchanged in price. There is not a burdensome amount of kerosene on hand. The outlook, therefore, is considered more encouraging.

A.P.I. Weekly Refinery Statistics

Week Ended March 15, 1941

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	20,638,000	8,649,000	9,909,000	542,000
Appalachian	91.0	3,220,000	467,000	374,000	117,000
Ind., Ill., and Ky.	90.2	19,353,000	3,077,000	2,573,000	584,000
Okla., Kans., and Mo.	76.9	8,790,000	1,937,000	1,291,000	279,000
Inland Texas	59.6	2,452,000	1,405,000	333,000	126,000
Texas Gulf	89.2	15,353,000	6,947,000	5,170,000	889,000
Louisiana Gulf	97.6	3,425,000	2,325,000	955,000	134,000
N. Louisiana and Ark.	51.5	548,000	541,000	289,000	39,000
Rocky Mountains	56.0	1,678,000	470,000	165,000	44,000
California	87.3	16,522,000	69,173,000	10,044,000	458,000
Total reported	86.2	91,979,000	94,991,000	31,103,000	3,212,000
Est. unreported	.....	7,000,000	1,670,000	540,000	338,000
*Est. total	.....	†98,979,000	96,661,000	31,643,000	3,550,000
*Est. total previous wk.	.....	97,178,000	97,372,000	32,429,000	3,505,000
*Mar. 16, 1940	.....	101,431,000	103,020,000	23,888,000	3,500,000

*Bureau of Mines. †Includes 6,547,000 bbl. aviation stocks.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended March 8, 1941	264,001,000 barrels
Week ended March 1, 1941	263,176,000 barrels
Week ended March 1, 1940	246,762,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of March 18, 1941

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr. tax	Gasoline Incl. tax	Kero. tank wag.
Chicago, Ill.	14.6	12.6	4.5	10.0
Decatur	14.6	13.1	4.5	9.5
Joliet	15.6	14.1	4.5	10.0
Peoria	15.6	13.2	4.5	10.0
Quincy	15.4	13.9	4.5	9.8
Davenport, Ia.	15.6	14.1	4.5	‡10.0
Des Moines	15.4	13.9	4.5	‡9.8
Mason City	15.8	14.3	4.5	‡10.2
Duluth, Minn.	16.4	14.9	4.5	10.8
Mankato	16.0	14.5	4.5	9.5
Minneapolis	16.0	14.2	4.5	10.4
LaCrosse, Wis.	17.0	15.5	5.5	10.4
Green Bay	17.4	15.9	5.5	10.8
Milwaukee	16.8	15.3	5.5	10.2
Detroit, Mich.	14.1	12.6	4.5	8.1
Grand Rapids	14.3	12.8	4.5	9.1
Saginaw	14.9	13.4	4.5	9.1
Evansville, Ind.	16.6	14.4	5.5	†9.8
Indianapolis	16.8	14.8	5.5	†10.0
South Bend	16.8	15.3	5.5	†10.0
Fargo, N. D.	18.2	16.7	5.5	11.6
Huron, S. D.	17.5	16.0	5.5	10.9
Kans. City, Mo.*	14.9	11.9	4.5	8.6
St. Louis*	14.7	13.2	4.5	9.6
St. Joseph	14.9	13.0	4.5	8.4
Wichita, Kans.	13.8	12.3	4.5	7.2

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers. On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off, minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Dec. 2, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex fuel oil A, 1-399 gal., 6.0 cents; 400-790 gal. 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex fuel oil B, 1-399 gal., 6.0 cents; 400-799 gal., 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex Bunker C fuel oil, 1-999 gal., 4.75 cents; 1,000 gal. and over, 3.75 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Gasoline Divided dlr.	Gasoline Incl. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank car	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
Atlantic City	11.30	12.60	4.5	7.2
Newark	11.30	12.60	4.5	7.2
Annapolis, Md.	12.85	14.35	5.5	9.5
Baltimore	12.25	13.75	5.5	8.0
Cumberland	13.65	15.15	5.5	10.0
Washington, D.C.	10.50	12.00	3.5	9.0
Danville, Va.	14.45	16.95	6.5	9.0
Norfolk	13.25	15.75	6.5	9.5
Petersburg	13.55	16.05	6.5	10.5
Richmond	13.55	16.05	6.5	10.5
Roanoke	14.75	17.25	6.5	10.0
Charles'n, W. Va.	14.05	16.55	6.5	11.5
Parkersburg	13.35	15.85	6.5	11.2
Wheeling	14.35	15.40	6.5	11.8
Charlotte, N. C.	16.40	16.50	7.5	9.8
Hickory	16.95	18.45	7.5	9.7
Mt. Airy	16.80	16.00	7.5	10.6
Raleigh	16.15	17.00	7.5	9.9
Salisbury	16.45	15.50	7.5	10.3
Charleston, S. C.	14.25	16.75	7.5	9.25
Columbia	15.10	17.60	7.5	(*)
Spartanburg	15.80	18.30	7.5	(*)

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery: 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Gasoline Net dlr.	Gasoline Incl. tax	Kero. tank wag.
Atlanta, Ga.	15.0	15.0	7.5	9.0
Augusta	16.0	16.0	7.5	9.5
Macon	15.0	15.0	7.5	9.0
Savannah	15.5	15.5	7.5	9.0
Birmingham, Ala.	16.5	16.5	8.5	8.0
Mobile	17.0	17.0	9.5	8.0
Montgomery	18.0	18.0	9.5	10.0
Jackson, Miss.	14.0	14.0	7.5	9.0
Vicksburg	15.5	15.5	7.5	8.5
Jacksonville, Fla.	16.0	16.0	8.5	8.0
Miami	16.0	16.0	8.5	8.0
Pensacola	17.0	17.0	9.5	8.0
Tampa	16.0	16.0	8.5	8.0
Lexington, Ky.	15.5	15.5	6.5	9.0
Covington	13.5	13.5	6.5	9.0
Louisville	15.0	15.0	6.5	8.5
Paducah	12.5	12.5	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon: Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank car	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
Philadelphia, Pa.	12.5	13.5	5.5	9.5
Pittsburgh	13.0	15.0	5.5	10.5
Allentown	13.0	14.5	5.5	10.5
Erie	12.5	15.0	5.5	10.0
Scranton	13.0	14.5	5.5	10.5
Altoona	13.0	15.0	5.5	10.5
Dover, Del.	...	14.0	5.5	10.5
Wilmington	...	13.5	5.5	10.0

Price basis to undivided dealers. dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck	Gasoline Serv. sta.	Gasoline Incl. tax	Kero. tank wag.
San Francisco	16.5	17.5	4.5	11.5
Los Angeles	16.0	17.0	4.5	10.0
Fresno, Calif.	17.5	18.5	4.5	12.5
Phoenix, Ariz.	20.5	21.5	6.5	*17.5
Reno, Nev.	19.5	20.5	5.5	13.5
Portland, Ore.	19.0	20.0	6.5	13.5
Seattle, Wash.	19.0	20.0	6.5	13.5
Spokane	20.5	21.5	6.5	16.5
Tacoma	19.0	20.0	6.5	13.5

*Includes 5-cent state tax.

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Cons'r tank car	Gasoline Dlr.* tank wag.	Gasoline Incl. tax	Kero. tank wag.
Albany	13.1	13.8	5.5	7.3
Met. New York	12.8	13.0	5.5	7.3
Buffalo	13.3	13.5	5.5	8.0
Rochester	13.5	13.7	5.5	8.6
Syracuse	12.8	12.0	5.5	8.5
Portland, Me.	12.7	13.7	5.5	7.5
Manchester, N. H.	13.8	13.0	5.5	8.5
Burlington, Vt.	14.1	14.3	5.5	7.3
Boston, Mass.	11.3	11.8	4.5	7.6
Worcester	11.9	12.0	4.5	7.5
Hartford, Conn.	12.8	13.0	4.5	6.8
New Haven	12.2	12.4	4.5	6.8
Providence, R. I.	11.3	12.4	4.5	7.4

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Denver, Colo.	14.5	5.5	10.5
Grand Junction	16.5	5.5	12.0
Pueblo	15.5	5.5	9.0
Casper, Wyo.	16.5	5.5	11.5
Cheyenne	12.0	5.5	11.0
Billings, Mont.	16.5	6.5	12.0
Butte	15.5	6.5	13.0
Great Falls	15.5	6.5	12.0
Helena	15.5	6.5	12.5
Salt Lake, Utah	16.0	5.5	14.0
Boise, Idaho	†18.6	6.5	16.0
Twin Falls	†19.6	6.5	16.5
Albuquerque, N. M.	*16.0	7.0	9.5
Roswell	*14.0	7.0	8.0
Santa Fe	‡17.0	7.5	9.5

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank car	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
New Orleans, La.	14.25	16.75	8.5	‡10.0
Baton Rouge	14.75	17.25	8.5	‡10.5
Alexandria	14.75	17.25	8.5	‡10.5
Lafayette	15.00	17.50	8.5	‡10.0
Lake Charles	14.75	17.25	8.5	‡10.0
Shreveport	14.00	16.50	8.5	10.0
Knoxville, Tenn.	18.00	20.00	8.5	12.5
Memphis	15.00	17.00	8.5	11.0
Chattanooga	17.50	17.35	8.5	12.0
Nashville	17.00	17.50	8.5	10.0
Bristol	18.25	18.75	8.5	11.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Texarkana, Ark.	13.5	5.5	6.0
Fort Smith	13.5	5.5	6.5
Little Rock	16.0	8.0	8.0
Muskogee, Okla.	13.5	5.5	7.0
Oklahoma City	11.5	5.5	6.5
Tulsa	12.5	5.5	6.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dlr. tax	Gasoline Incl. tax	Kero. tank wag.
Omaha	17.4	15.9	6.5	9.8
McCook	17.0	14.4	6.5	9.5
Norfolk	17.5	15.9	6.5	9.9
North Platte	17.8	16.0	6.5	10.2
Scottsbluff	17.4	15.0	6.5	10.8

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Gasoline Dlr. tax	Gasoline Incl. tax	Kero. tank wag.
Dallas, Tex.	11.5	15.5	5.5	6.0
Fort Worth	11.5	15.5	5.5	7.0
Houston	12.0	16.0	5.5	8.0
San Antonio	12.5	17.0	5.5	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Tank-Wagon Changes

Socony-Vacuum Oil Co., Ltd., increased gasoline prices March 12 throughout its northeastern marketing territory, excepting western New York State. The company advanced tank-car and tank-wagon prices at Albany, N. Y., 1.3 cents; advanced tank car 0.5 cent and tank wagon 1 cent at Portland, Me.; raised tank car 0.4 cent and tank wagon 0.2 cent at Manchester, N. H.; advanced tank car and tank wagon 2.3 cents at Burlington, Vt.; advanced tank car and tank wagon 0.4 cent at Boston, Mass.; advanced tank car 0.4 cent and tank wagon 0.5 cent at Worcester, Mass.; advanced tank car and tank wagon 1.5 cents at Hartford, Conn.; advanced tank car and tank wagon 1.1 cents at New Haven, Conn., and advanced tank car 0.4 cent and tank wagon 0.7 cent per gallon at Providence, R. I.

Standard Oil Co. of New Jersey reduced No. 1 fuel oil tank-wagon price 0.4 cent per gallon February 28 at Baltimore, Md. The company reduced tank-wagon prices of kerosene 1 cent per gallon at Norfolk, 0.7 cent at Petersburg, and 0.5 cent at Richmond, Va., March 3.

Standard of New Jersey reduced tank-wagon prices of Nos. 1, 2, and 3 fuel oil in Virginia in amounts ranging from 0.15 to 0.3 cent per gallon February 28. In most cases the prices were reduced 0.25 cent. The company reduced tank-wagon price on No. 2 fuel oil 0.2 cent per gallon March 3 in North Carolina, excepting Hickory, N. C. The company reduced tank-wagon price on Nos. 1 and 2 fuel oils 0.2 to 0.3 cent throughout South Carolina on March 3, except on No. 2 fuel at Spartanburg, S. C.

Standard Oil Co. of Kentucky reduced the dealer and consumer-tank-wagon price on regular gasoline 0.5 cent per gallon at Augusta, Ga., March 4.

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of March 18, 1941
(Most prices in cents per gallon)

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04⅝
63-66 octane	.04	.04¼
60 octane and below	.03⅝	.03⅞
60-62 400 grades:		
72-74 octane (regular)	.04⅜	.04⅝
63-66 octane	.04	.04¼
60 octane and below	.03⅝	.03⅞

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04½
63-66 octane	.03⅞	.04⅛
60 octane and below	.03⅝	.03⅝
60-62 400	.03⅝	.04½

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04½
63-66 octane	.03⅞	.04⅛
60 octane and below	.03¾	.03⅞

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04½
60 octane and below	.03⅝	.03¾

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04⅝
63-66 octane	.04	.04⅜
60 octane and below	.03⅝	.03⅞
60-62 400 grades:		
72-74 octane (regular)	.04⅜	.04⅝
63-66 octane	.04	.04¼
60 octane and below	.03⅝	.03⅞

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.06
72-74 octane	.05⅝

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.05½	.07
54-58 U. S. Motor	.04¾	.06⅛

EAST COAST (domestic)—

U. S. Motor grades:		
New York (Bayonne)*	.05½	.05¾
Philadelphia	.05½	.06¾
Boston	.05½	.06
Baltimore	.05½	.06¾
Charleston, S. C.	.06¼	.06½

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
72-74 octane (leaded)	.04¾	.04⅞
70-72 octane (unleaded)	.04¾	.05
68-70 octane (unleaded)	.04½	.04¾
Below 68 octane (unleaded)	.04¼	.04½

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02⅝
Grade 18-55	.03	.03⅛

NORTH TEXAS—

Grade 26-70		.02⅛
Grade 18-55	.02⅝	.02¾

CALIFORNIA—

75-85 375-390	.04⅛	.05⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.02⅛

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p., 110-flash, 540-550 e.p.	.03½	.03⅝
41-43 gr., 300-320 l.b.p., 110-125 flash, 500-520 e.p.	.03⅝	.03¾
46-48 gr., 210-230 l.b.p., 480-max., e.p.	.03⅞	.04

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.04⅛	.04⅜
41-43	.04⅛	.04¼

NORTH TEXAS—

41-43	.04	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04	.04⅛

ARKANSAS (Ark. and N. La. del.)—

41-43	.04	.04¼

PENNSYLVANIA (inland refineries)—

46	.05¼	.05½
45	.05⅛	.05¼

CHICAGO (Based on Group 3)—

42-44	.04⅛	.04⅜
41-43	.04⅛	.04¼

CALIFORNIA (Pac. Coast market)—

38-40 high-burning test	.04½	.05½

NEW YORK (Bayonne, N. J.)—

41-43	.046	.049

GULF COAST (domestic)*—

41-43	.03¼

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03⅞	.04⅛
No. 1 prime white, 38-42	.03¾	.04
No. 1 straw, 38-40	.03¾	.04
No. 2 straw, 32-36	.03⅝	.03⅝
No. 3 zero to 10, 28-32	.03¼	.03½

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅜	.03⅞
No. 1 straw, 38-40	.03⅝	.03¾

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03½	.03⅝

CHICAGO (Based on Group 3)—

Range oil	.03⅞	.04⅛
No. 1 prime white, 38-42	.03¾	.04
No. 2 straw, 32-36	.03⅝	.03⅝
No. 3 zero to 15, 28-32	.03¼	.03½

NEW YORK (Bayonne, N. J.)—

*No. 1	.046	.049
*No. 2	.040	.043
*No. 4		.043

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.03⅛	.03¼
No. 5, low pour point, 18-22	.75	.80
No. 6, 15 and above, 8-14	.60	.65

NORTH TEXAS—

U.G.I. gas oil, under 35	.03	.03⅛
No. 5, low pour point, 18-22	.75	.80
No. 6, 15 and above, 8-14	.60	.65

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.03⅛	.03¼
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 8-14	.60	65

PENNSYLVANIA (inland refineries)—

36-40	.04½	.05

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.85
10-17 (high sulfur)	.45	.60
San Joaquin Valley:		
10-18 (tank cars)	.50	.70
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.75	.80

GULF COAST—

No. 2 fuel	.03	.03⅛
43-47 diesel		.03
48-52 diesel	.03⅛	.03⅝
53-57 diesel	.03½	.03¾
58-and-above diesel	.03⅝	.03¾
Diesel bunkers		1.40
Bunker C (bulk cargoes)		.75
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.044
28-30 diesel (lighterage 6¼c per bbl.)		1.65
28-30 diesel (tank cars)		.043
Bunker C (to ocean-going ships in N. Y. Harbor)		1.25
Industrial fuel (tank cars)	.0315	.035

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25	.18
150-160 D, 0-10	.13½
150-160 D, 10-25	.13
100-110 D, 0-10	.13
100-110 D, 10-25	.12½
Steam refined:	
600 dark green (untreated)	.07

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.16½
15 pour point		.15½
25 pour point		.14
Steam refined:		
600		.09
650	.09	.11
600 flash	.10	.12
630 flash	.11	.12

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.08
180-3		.08½
200-3		.08½
250-3		.10
280-3		.10½
280-4		.10
300-3½		.11
350-3½		.11½
400-3½		.12
500-3½		.12½
600-3½		.13
100-2½ paraffin oil 10-25		.05¼
10-25 pour point:		
200-3		.08
250-3		.09½
280-3		.10
280-4		.09½

GULF COAST—

Pale oils:		
100-3	.05½	.05¼
200-3	.07½	.07¼
300-3	.07½	.07⅝
500-3½	.08¼	.08½
750-3½	.08⅝	.08⅝
1,200-3½	.08¾	.08⅞
2,000-4		.09
3,000-4		.10½
Red oils:		
200-5-6	.06⅞	.07
300-5-6	.07¼	.07½
500-5-6	.08	.08¼
750	.08⅜	.08½
1,200-5-6	.08½	.08⅝

CALIFORNIA (moving to dom. market)—

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:	
Zero pour point	.23½
10 pour point	.22½
15 pour point	.21½
25 pour point	.19
200 vis., at 70° F., 3 color:	
Zero pour point	.25½
10 pour point	.24½
15 pour point	.23½
25 pour point	.21

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.02½	.02¾

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale		.02¾
124-126 (A.m.p.) w.c. scale		.02¾

NEW YORK—

Wax in bags fully refined:	
125-127 (A.m.p.) wax	.0560
128-130 (A.m.p. wax	.0560
130-132 (A.m.p.) wax	.0585
133-135 (A.m.p.) wax	.0615
135-137 (A.m.p.) wax	.0640
Crude scale:	
124-126 (A.m.p.) w.s.	.02¼ .02½
124-126 (A.m.p.) y.s.	.02¼ .02½
Petrolatum in barrels, carload lots:	
Dark green	.02125 .02625
Amber	.02375 .02875
Extra amber	.02625 .03000
Lily white	.04375 .05125
Snow white	.05125 .06000
Cream	.03375 .04125

Export Prices

GASOLINE

GULF COAST—

60-62 400	.03¼	.04
61-63 390	.03¼	.04
64-66 375	.03¼	.04

LOS ANGELES—

U. S. Motor grades:		
Above 69 octane	.05½	.05¾
65-69 octane	.05¼	.05½
60-65 octane	.04½	.05

KEROSENE

GULF COAST—

41-43 water white	.03⅛	.03⅝

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:	
600 S.R. unfiltered	.18
630 S.R. unfiltered	.18¼
600 flash, S.R.	.18½
650 flash, S.R.	.20
Bright stock:	
Light, 25 pour point	.22

NEUTRAL OIL

200-3 color	.28½
150-3 color	.27

PARAFFIN WAX

NEW YORK (prices per lb.)—

123-125 A.m.p.		.0560
125-127 A.m.p.		.0560
128-130 A.m.p.		.0585
133-135 A.m.p.		.0615
135-137 A.m.p.		.0640
Crude scale:		
124-126 w.s.	.02½	.02⅝
124-126 y.s.	.02½	.02⅝

EQUIPMENT PROGRESS...

New High-Speed Developer Announced by Charles Bruning

A new BW developing machine that answers today's needs for greater print production has just been announced by Charles Bruning Co., Inc., 100 Reade Street, New York. Known as the Bruning No. 159 volumatic developer, the machine is designed to be used with the Bruning Model "75" BW printer. Using this new combination, one operator performs the entire

printing and developing operation with ease and speed, the manufacturer states.

In operating the No. 159 volumatic sheet developer, the sensitized paper and tracings are fed into the machine at the front, where they are immediately exposed in the printer section. A vacuum separator roll at the discharge point of the printer separates the tracings from the exposed prints, allowing the prints to pass automatically to the developing and drying sections of the No. 159 developer. The tracing is returned to the operator, while the completely developed print is delivered flat and dry at the rear of the machine.

The No. 159 volumatic developer consists of a separator roll, water roll, and a series of bands which carry the developed prints through the drying section. The application of the positive vacuum separator principle in the No. 159 volumatic developer is entirely new, according to the makers. The developing section is driven by the printer, and is synchronized to operate at exactly the same printing speeds. The "75" printer has a speed range of 0 to 25 ft. per minute.

TRADE LITERATURE

WAGNER ELECTRIC CORP., 6400 Plymouth Avenue, St. Louis, Mo.—Bulletin FU-41, illustrating and fully describing the complete line of Wagner cooling and ventilating equipment for 1941.

BRISTOL CO., Waterbury, Conn.—Catalog 1015 on modern liquid-level gages. Float, pressure-bulb, pressure, air-bubbler, counterpoise and differential-pressure type water and liquid-level gages are described for all types of applications, including the measurement and automatic control of liquids in open, as well as in closed vessels where the surface of the liquid is under static pressure. It will be noted in this bulletin that with these instruments the level of almost every kind of liquid—whether flowing, turbulent, corrosive, covered with ice or carrying solid matter—can be recorded, indicated or automatically controlled without difficulty.

VICTOR EQUIPMENT CO., 844-50 Folsom Street, San Francisco, Calif.—48-page catalog covering its comprehensive line of gas-welding and cutting apparatus. Cut-open sections of various regulator types and of its major welding torch, in three colors, offer a clear picture of the design and construction features as well as the path which the gases travel through these devices. This catalog will be furnished free of charge, upon request, to any company or individual interested in gas-welding and cutting equipment.

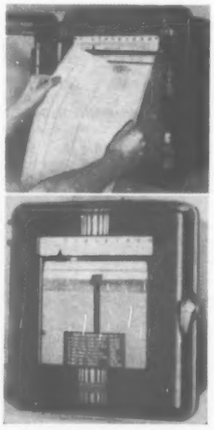
Kinley Screen Shot Offers Method Of Opening Screens

The latest development by the explosive engineers of the M. M. Kinley Co., 301 Adams, Houston, Tex., has been announced as an improved method for screen reconditioning jobs. The Kinley screen shot consists of a series of explosive charges placed in individually spaced bakelite and aluminum shells. The shot, which can be confined to any desired portion of the liner, forces the screen wrapping away from the original screen perforations, assuring a complete opening without damaging the pipe. This shot is said to be highly effective in performing a squeeze job for bottom-hole water.

In the accompanying cut is shown a retrieved section of screen that was opened by this method.

New Daily Tear-Off Device For Micromax Recorders

This new device enables users of Micromax strip-chart recorders to tear off and file a record of each day's operation. Made to fit modern Micromax recorders, which have been standard since 1936, the device can be quickly and easily attached. When used, there is no wasted chart, and it is not necessary to rethread the chart through the guides. A rubber stamp can be furnished which identifies the recorder and the location of the thermocouples.



Daily strip-chart records are thus provided in a form as convenient to file as those from round-chart recorders, yet with the strip-chart advantage of a more detailed record, as well as the multiple-point feature available only with strip charts. Cost is between $10 and $15 depending on whether or not a time-stamped paper is used.

New Utility Block Announced By Baash-Ross Tool Co.

A new single-sheave utility block which can be quickly converted for use as a floor block, as a bailing and coring block, or a tubing block by means of

interchangeable parts, is manufactured by Baash-Ross Tool Co., 5512 Boyle Avenue, Los Angeles, Calif.

The utility block is of all-steel construction, with tapered roller bearings for the sheave and 360° swivel. The sheave is heat-treated cast-alloy steel, or manganese steel, 18 in. o.d., and available grooved for any diameter line ⅞ in. or smaller. The block has a working capacity of 78,000 lb., with a safety factor of 2-to-1, based on the yield point of the material. Integral side plates guard the sheave and prevent the line from jumping the groove. A side-opening feature allows the line to be placed around the sheave easily and without danger of kinking, eliminating threading the line through the block.

When used as a floor block in well-servicing work, the utility block is designed to be carried on the portable well-pulling unit, and to be attached to the base plate which is permanently anchored into the derrick foundations. Attachment is easy, being accomplished by inserting a heavy bolt. The base plate permits the block to move through an arc of 90°, and provides a positive stop against which the block can tilt at an angle of 45° from the floor in any direction.

The utility block becomes a high-speed bailing and coring block when it is attached to the beam clamp and is hung from the base beam of the crown block. Beam clamps are available to fit all sizes of crown-block base beams. For converting the utility block for use as a tubing block, a forged-steel clevis assembly is supplied. The clevis is free to swing from side to side, but the swivel can be locked when desired.

IDECO Adds Giant Crown And Traveling Blocks

IDECO announces the addition to its line of drilling blocks of the new IDECO giant crown and traveling blocks. Ample capacity is provided in these blocks for drilling in excess of 15,000 ft. The giant-size 48-in. sheaves, mounted in heavy-duty roller bearings and individually lubricated, provide a large radius which reduces the bending stress and increases the life of the wire rope. The traveling block is of the overbalanced type and is proportioned to prevent overturning and fouling of the lines when the block is lowered. Sheaves and bearings are interchangeable in these two blocks. Offered as five or six-sheave crown block and five-sheave traveling block. Sheaves of chrome nickel, chrome-nickel "Hi-Temper" groove or manganese steel.

AMONG EQUIPMENT MEN...

W. F. Rockwell, Jr., to Join Research Tour of South America

W. F. Rockwell, Jr., vice president of the Pittsburgh Equitable Meter Co., Pittsburgh, Pa., will represent his company on an "industrial exploration tour" of six South American countries, March 17 to April 30, under the sponsorship of the National Research Council in cooperation with the Inter-American Development Commission in Washington. He will be a member of a party of 28 key industrial, banking and research executives who will tour Colombia, Peru, Chile, Argentina, Uruguay and Brazil, and will submit a report on industrialization possibilities to the Department of Commerce, the Inter-American Development Commission, and other interested government departments and agencies on its return. The trip will be made entirely by air in a chartered plane of Pan American Airways.

In charge of the tour will be Maurice Holland, director of the National Research Council's division of engineering and industrial research. "South America is the richest storehouse of industrial materials, including minerals, metals, oils, rare hardwoods, industrial diamonds and other products in the entire world," Mr. Holland said in commenting on the projected group tour. "However, these materials aren't worth much unless the technical skill necessary to use them is present. We intend to make a study of the potentialities, as well as the limitations, of the countries and to offer whatever technical help we can to help the nations develop industrially."

As a participant in the council's South American trip, Mr. Rockwell was a guest to Secretary of Commerce Jesse H. Jones, Nelson A. Rockefeller and William S. Batt, chairman of the Research Council, at a dinner held in in Washington on March 14, immediately prior to the start of the tour.

BUSINESS NOTES

L. C. (Dusty) Rhoads, of Hercules Tool Co., Tulsa, has been transferred from the company's southern office to the home office at Tulsa, and made general sales representative. Mr. Rhoads was formerly district manager for Hercules Tool stationed at Fort Worth, Tex. He is widely known in the oil fields of the South and in his new capacity will be in close touch with all accounts serviced by him in the past.

Harry A. Burdorf and Frank P. Rhame, vice presidents of the Lunkenheimer Co., Cincinnati, Ohio, were elected to the board of directors at the annual stockholders meeting, February 27. Mr. Burdorf, who has been with the company since 1905, is vice president in charge of sales, and Mr. Rhame, who has been with Lunkenheimer since 1919, is vice president in charge of sales engineering. Both are well known in business and industrial circles.

Edwin L. Dennis, chief combustion engineer, of Coppus Engineering Corp., Worcester, Mass., since 1939, has been appointed to the faculty of the Louisiana State University, Baton Rouge, La. Establishing headquarters in Baton Rouge, Mr. Dennis assumed his dual duties beginning February 1, retaining his connection with Coppus Engineering Corp.

K. S. Richards, distributor for Atlas Imperial diesel engines, recently completed the consolidation of shops, various warehouse stocks and offices at a new plant at 840 West Vickery in Fort Worth, Tex. The consolidation will enable the company to better serve the oil industry in the Mid-Continent as well as the many owners of Atlas Imperial diesel engines.

R. W. Hill, for the past 4 years design engineer with Jarecki Manufacturing Co. at Tulsa, has resigned to accept a position as engineer with Benham Engineering Co., at Leesville, La.

The Seamless Steel Tube Institute, 3510 Gulf Building, Pittsburgh, Pa., announces the adoption of a program of market research and related activities which is to be put into effect March 1 under the direction of W. A. Cather, now advertising manager of the Babcock & Wilcox Co., 85 Liberty Street, New York City. In his new position, Mr. Cather will operate out of the institute's office in Pittsburgh and the offices of the Michel-Cather organization at 2 Park Avenue, New York City.

G. L. Wigton Appointed Illinois Basin Representative

Announcement is made of the appointment of Glen L. Wigton as Illinois basin representative for the Franks Manufacturing Corp. of Tulsa. Mr. Wigton will headquarter at Vincennes, Ind. to represent the Franks line of skid-mounted and truck-mounted "slim-hole" rotary drilling rigs, spudders, telescoping and one-piece derricks, and servicing units. He has had nearly 25 years of experience in the automotive and oil-field equipment business, both in the vicinity of Tulsa and with other firms in the Illinois, Kentucky, Michigan, and Indiana area.

Chain Belt Co. Elects J. C. Merwin President

At the annual meeting of the board of directors of Chain Belt Co., J. C. Merwin, vice president and treasurer, was elected president of the company to succeed C. R. Messinger who died February 4. G. M. Dyke, assistant treasurer, was elected treasurer, and A. F. Kessler, also an assistant treasurer, was elected to the new office of comptroller. Walter Kasten, president of the First Wisconsin National Bank of Milwaukee, was made a director at the annual stockholders' meeting which preceded the directors' meeting.

J. C. MERWIN

Mr. Merwin joined the Chain Belt organization in 1917 and has been successively superintendent, works manager, assistant to the president, director, vice president, and treasurer. He is a graduate of Sheffield Scientific School of Yale University, class of 1910, and began his business career as an apprentice toolmaker at the Geometric Tool Co., of New Haven, Conn. Later, he was assistant superintendent of the National Blank Book Co., of Holyoke, Mass.

Both Mr. Dyke and Mr. Kessler have been connected with Chain Belt Co. since 1923. When Chain Belt acquired the Stearns Conveyor Co. of Cleveland, Ohio, in 1926, Mr. Dyke was elected vice president of this subsidiary but returned to Milwaukee in 1933 when the operations of the Stearns Conveyor plant were moved there. Since that time he has been assistant treasurer. Mr. Kessler was chief accountant prior to becoming assistant treasurer in 1938.

George W. Walton Appointed Sales Manager of Unit Rig

Unit Rig & Equipment Co., Tulsa, has announced the appointment of George W. (Jack) Walton as sales manager. Mr. Walton recently resigned as vice president and sales manager of the Emsco Derrick & Equipment Co., after having been connected with that organization for a period of 15 years. It is a coincidence that he started his career with Emsco in Tulsa, where he first introduced their line of rotary equipment as an exhibitor in one of the early International Petroleum Expositions.

Prior to his connection with Emsco, Mr. Walton was connected with Wilson-Snyder and previous to that he served 5 years with the National Supply Co., 2 years of which were spent in Europe with headquarters in London. It is interesting to know that Mr. Walton has also handled export sales for Emsco and will pay particular attention to the export market for Unit Rig. He is a member of the Los Angeles chapter of Nomads. Mr. Walton is a native Texan and received his early education there, but later attended the Missouri School of Mines. He is married and together with Mrs. Walton will immediately establish his residence in Tulsa.

Scherbatskoy Made Vice President of Well Surveys, Inc.

At their annual meeting, the directors of Well Surveys, Inc., elected S. A. Scherbatskoy as vice president. Mr. Scherbatskoy was, during the past 5 years, director of research of Engineering Laboratories, Inc., and in charge of instrument research for Seismograph Service Corp. Recently, he became very actively engaged in organizing and supervising the development in radioactivity well logging which is being carried on by Well Surveys, Inc. Prior to his work in the oil industry, Mr. Scherbatskoy was engaged in research and development in the Bell Telephone Laboratories. Mr. Scherbatskoy graduated from the University of Paris in 1929 in physics.

Dallas Branch Opened by General Controls Co.

Furthering its expansion program, General Controls Co., of Glendale, Calif., announces the establishment of a direct factory branch office at 1100 Cadiz Street, Room 202, Dallas, Tex. In charge of the newly opened branch is Robert C. Allen, sales engineer. Mr. Allen is a native of Fort Worth and has lived in Houston and Dallas for many years. He attended the University of Texas. Previous to his association with General Controls he was connected with the Western Auto Stores, Houston Warehouse division.

The establishment of this branch enables General Controls to carry complete stocks of its automatic temperature, pressure and flow controls in Dallas and, in conjunction with its Houston branch, to serve directly its increasing Texas business.

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Carlinville, Ill.

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INVESTIGATE DOLLAR acre up Oil acreage ahead of Active Drilling for quick advances. References Satisfied Dealers and Investors.
E. M. ADAMS, MARSHALL, TEXAS.

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WOULD like to contact man thoroughly experienced in the production and manufacture of Aromatic Petroleum Solvents. New Department. Box A-412, The Oil and Gas Journal, Tulsa, Okla.

Situations Wanted

MECHANICAL engineer, six years' experience in design, maintenance, and operation of well surveying equipment. Wish employment in research or development work. Box A-400, The Oil and Gas Journal, Tulsa, Oklahoma.

PRODUCTION SUPERINTENDENT—20 years experience, good references from major company. Go anywhere. Available immediately. Box A-402, The Oil and Gas Journal, Tulsa, Okla.

ATTORNEY, geologically trained, experienced in the oil business, widely acquainted in southwest Texas, desires position with an oil company interested or planning activities in that area. Box A-410, The Oil and Gas Journal, Tulsa, Okla.

ENGINEER Mechanical Construction—12 years' experience refinery, gasoline plant, power units construction. Returned February 1st from construction in South America. Qualified refinery operation. Desirous making connection in mechanical construction or operation. Age 35 years. College. Write or wire Box A-374, The Oil and Gas Journal, Tulsa, Okla.

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Box A-413, The Oil and Gas Journal, Tulsa, Oklahoma.

REF. ENG.: Supervisor, 11 yrs. broad and gen. ref. exp. in lubes, naphthas, gasoline, wax, distillation and cracking; now employed, desires change. Exp. incl. research, ref. inspec. chief chem. proc. eng.; ability demonstrated. Reply Box A-411, The Oil and Gas Journal, Tulsa, Okla.

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Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

INQUIRIES SOLICITED from Capital Seekers who have worthy projects, by house with excellent facilities. Moderate charges, confidential. Brown Hartwell Company, 110 E. 42nd St., New York.

Geophysical Service

WHY does the needle of the compass point North? Why do the Geese fly North in the Spring How does the Bird Dog point Quail? It must be a natural law in operation. Newton's Law and Relativity are facts. It is a fact that Oil and Gas are located by a Direct Geophysical Method. Locate your next well this way and have a producer, not just a hole in the ground. Gravitational Selector, 14957 Lakewood Heights Blvd., Lakewood, Ohio.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma